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PLENARY MEETING

United States of America

PROPOSALS FOR THE WORK OF THE CONFERENCE

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Introduction

In this document the United States makes proposals under a number of WRC-2000 agenda topics. It is anticipated that the United States will submit at a later date some additional proposals including proposals for future conferences. The United States also supports many of the common proposals of the Inter-American Telecommunications Commission ("CITEL"). The United States will consider adoption of additional CITEL proposals as they are completed.

Summary of the United States proposals

Agenda item 1.2

The United States supports the CITEL proposal that modifies Appendix **S3**.

The United States submits a proposal for the modification of Recommendation **66 (Rev.WRC-97)**.

Agenda item 1.3

The United States submits two proposals for this agenda item:

– a proposal to modify Appendix **S7** and consequential modifications to Appendix **S5**;

– a proposal for the suppression of Resolution **60**.

Agenda item 1.4

The United States supports the CITEL proposal for confirmation of the fixed service allocation in the 31.8-33.4 GHz (Resolutions **126** and **726**).

The United States submits a proposal concerning high-density applications in the fixed service at 55.78-56.26 GHz.

Agenda item 1.6.2

The United States supports the CITEL proposal not to identify a global control channel for IMT-2000.

Agenda item 1.7

The United States supports the CITEL proposal for protecting operational, distress and safety communications in HF bands used by the aeronautical mobile (R) and maritime mobile services.

Agenda item 1.8

The United States submits a proposal for communications by earth stations on board vessels using frequencies allocated to the fixed-satellite service and used by existing space segment in the fixed-satellite service.

Agenda item 1.9

The United States supports the CITEL proposal for no allocation for the mobile-satellite service (space-to-Earth) in any portion of the 1 559-1 567 MHz under agenda item 1.9. We also support the suppression of Resolution **220**.

Agenda item 1.11

The United States submits a proposal for the Tables of Criteria applicable to MSS allocations for the non-GSO systems below 1 GHz.

Agenda item 1.12

The United States supports the CITEL proposal for the modification of footnote **S5.541A** and the suppression of Resolution **121**.

Agenda item 1.14

The United States supports the CITEL proposal for Resolution **123** (Implementing feeder links of non-geostationary satellite networks in the mobile-satellite service in the band 15.43-15.63 GHz (space-to-Earth)).

Agenda item 1.15.1

The United States submits two proposals for this agenda item:

– a proposal for additional radionavigation-satellite service (RNSS) signals near 1 GHz;

– a NOC proposal regarding additional radionavigation-satellite service (RNSS) signals near 5 GHz.

Agenda item 1.15.2

The United States submits a proposal for an allocation for space-to-space use for RNSS.

Agenda item 1.16

The United States submits a proposal to modify the allocations above 71 GHz.

Agenda item 1.17

The United States support the CITEL proposal for Earth exploration-satellite (passive) and the space research (passive) services in the band 18.6-18.8 GHz on a primary basis in Regions 1 and 3.

Agenda item 1.18

The United States supports the CITEL proposal for the modification of Appendix **S18** and Resolution **342**.

Agenda item 1.19*bis*

The United States submits a proposal, which reflects the view that there is no need to repeat the work and discussion of WRC-95 and WRC-97.

Agenda item 1.20

The United States submits a modification of Appendix **S30** for the relaxation in the pfd limits for Alaska.

Agenda item 2

The United States submits a proposal for the modification of Resolution **27** and Resolution **28**.

Agenda item 4

The United States submits a proposal for the suppression of Resolution **63**.

Plenipotentiary resolutions

The United States submits a NOC proposal for Resolution **87** (Minneapolis, 1998).

Proposals for agenda item 1.2

A proposal for the modification of Recommendation 66 (Rev.WRC-97)

Background information

Recommendation **66** is being modified to reflect the current status of this document. Work has been completed on space service spurious emissions, so we are proposing the suppression of *considering f), recommends* 1 and 2. We are proposing the suppression of *recommends* 9 because TG 1/5 has concluded that OOB emission limits are not appropriate at this time.

MOD USA/12/1

RECOMMENDATION 66 (Rev.WRC-~~97~~2000)

Reasons: Editorial.

Studies of the maximum permitted levels of unwanted emissions

The World Radiocommunication Conference (~~Geneva, 1997~~Istanbul, 2000),

considering

a) that Appendix **S3** specifies the maximum permitted levels of spurious emissions, in terms of the mean power level of any spurious component supplied by a transmitter to the antenna transmission line;

b) that the principal objective of Appendix **S3** is to specify the maximum permitted levels of spurious emissions that, while being achievable, provide protection against harmful interference;

c) that excessive levels of unwanted emissions may give rise to harmful interference;

d) that while out-of-band emissions can also give rise to harmful interference, the Radio Regulations do not provide general limits for these emissions;

e) that while Appendix **S3** applies generally to the mean power of a transmitter and its spurious emissions, it also takes account of a variety of emissions where interpretation of the term "mean power", and thus its measurement, would be difficult, particularly in the cases of digital modulation broadband systems, pulsed modulation and narrow-band high-power transmitters;

SUP USA/12/2

f)

Reasons: Work has been completed on space service spurious emissions.

MOD USA/12/3

~~g~~f) that unwanted emissions from transmitters operating in space stations may cause harmful interference, particularly emissions from wideband amplifiers which cannot be adjusted after launch;

~~h~~g) that unwanted emissions may cause harmful interference to safety services and radio astronomy and space services using passive sensors;

Reasons: Consequential numbering changes.

MOD USA/12/4

~~i~~h) that, for technical or operational reasons, more stringent spurious emission limits than the general limits in Appendix **S3** may be required to protect specific services, such as safety services and passive services in specific bands or situations;

Reasons: Edited to conform to the concept in the recommends that limits may be needed for specific situations.

MOD USA/12/5

~~j~~i) that broadband digital modulation may cause unwanted emissions at frequencies far from the carrier frequency,

Reasons: Consequential number change.

noting

a) that safety services and passive services have in many cases been allocated frequencies adjacent or close to those of services employing high-power transmitters;

b) that some administrations have adopted more stringent limits for spurious emissions than those specified in Appendix **S3**,

SUP USA/12/6

recommends that ITU-R

1

Reasons: Work has been completed on space service spurious emissions.

SUP USA/12/7

2

Reasons: Work has been completed on space service spurious emissions.

MOD USA/12/8

~~3~~1 continue the study of spurious emission levels in all frequency bands, emphasizing the study of those frequency bands, services and modulation techniques not presently covered by Appendix **S3**;

~~4~~2 study the question of unwanted emissions resulting from transmitters of all services and all modulation methods, and, on the basis of those studies, develop a Recommendation or Recommendations for maximum permitted levels of spurious emissions and out-of-band emissions;

~~5~~3 establish appropriate measurement techniques for unwanted emissions, where those techniques do not currently exist, including the determination of reference levels for wideband transmissions as well as the applicability of reference measurement bandwidths;

~~6~~4 study the reasonable boundary of spurious emissions and out-of-band emissions with a view to defining such a boundary in Article **S1**;

~~7~~5 study those frequency bands and instances where, for technical or operational reasons, more stringent spurious emission limits than the general limits in Appendix **S3** may be required to protect safety services and passive services such as radio astronomy, and the impact on all concerned services of implementing or not implementing such limits;

~~8~~6 study those frequency bands and instances where, for technical or operational reasons, out-of-band limits may be required to protect safety services and passive services such as radio astronomy, and the impact on all concerned services of implementing or not implementing such limits;

Reasons: Consequential numbering changes.

SUP USA/12/9

9

Reasons: Suppressed because TG 1/5 has concluded that OOB emission limits are not appropriate at this time.

MOD USA/12/10

~~10~~7 report the results of studies under *recommends that ITU-R* ~~6, 7 and 8~~4, 5 and 6 above to a competent world radiocommunication conference(s).

Reasons: Consequential numbering change.

Proposals for agenda item 1.3

"to consider the results of ITU-R studies in respect of Appendix **S7/28** on the method for the determination of the coordination area around an earth station in frequency bands shared among space services and terrestrial radiocommunication services, and to take the appropriate decision to revise this Appendix"

A proposal to modify Appendix S7 and consequential modifications to Appendix S5

Background information

Appendix **S7** provides the methods for determining the coordination area around earth stations. These methods have not been updated in the Radio Regulations since 1979. Since that time system characteristics have changed, new bands have been allocated to satellite services, and propagation tools have been improved.

Recommendation ITU-R **SM.XX** consolidates the text of Recommendations ITU-R **847** through **849**, uses updated system characteristics, extends the frequency range, and separates the propagation aspects from other probability aspects. Therefore, it serves as a useful basis for updating Appendix **S7**.

Recognizing that the frequency bands covered by the methods for determining coordination areas, the system technical characteristics, and the potential operating scenarios will change with the decisions at each WRC, the United States proposes incorporating Recommendation ITU-R **SM.XX** into the Radio Regulations by reference. Even if Appendix **S7** is updated based on Recommendation ITU-R **SM.XX**, it will probably be out-of-date at the close of WRC-2000 based on decisions made at the Conference. It will remain so for years to come unless the recommendation is referenced to facilitate future updates. If the incorporation-by-reference method is not used, future updates will require a specific agenda item to be agreed. Given that it has required twenty years to update the current appendix and noting the rapid evolution of satellite and terrestrial radio communications, another long delay in updating the text would not be acceptable.

This proposed modification to Appendix **S7** involves the suppression of the entire text of the Appendix and its replacement with the "incorporation-by-reference" text as shown below. Furthermore, it includes updated references in Appendix **S5**, Table **S5-1**, and Appendix **S5**, Annex 1, Tables 2, 3 and 4.

Proposal[1]

SUP USA/12/11

APPENDIX S7

Method for the determination of the coordination area around an earth station in frequency bands between 1 GHz and 40 GHz shared between space and terrestrial radiocommunication services

Reasons: All text in the current Appendix S7 should be suppressed.

[1] Only the portion of the tables being modified is shown in this proposal.

ADD USA/12/12

APPENDIX S7

Method for the determination of the coordination area around an earth station in frequency bands between 0.1 GHz and 105 GHz shared between space and terrestrial radiocommunication services

The method for determining the coordination area around an earth station between the frequency bands between 0.1 GHz and 105 GHz shared between space and terrestrial radiocommunications services is given in Annexes 1 and 2 of Recommendation ITU-R SM.XX.

Reasons: To update the method for determining coordination areas and to provide a responsive mechanism for future updates.

MOD USA/12/13

APPENDIX S5

Identification of administrations with which coordination is to be effected or agreement sought under the provisions of Article S9

TABLE S5-1

Technical conditions for coordination

(see Article S9)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
No. **S9.17** GSO, non-GSO/ terrestrial	A specific earth station or a typical mobile earth station in frequency bands above 1 GHz allocated with equal rights to space and terrestrial services in respect of terrestrial stations, where the coordination area of the earth station includes the territory of another country, with the exception of the coordination under No. **S9.15**	Any frequency band allocated to a space service, except those mentioned in the Plans in Appendix **S30A**	The coordination area of the earth station covers the territory of another administration	~~Appendix **S7**~~ Recommendation ITU-R SM.XX (for earth stations in the radiodetermination-satellite service (RDSS) in the bands: 1 610-1 626.5 MHz, 2 483.5-2 500 MHz and 2 500-2 516.5 MHz, see Remarks column) 1) The coordination area of aircraft earth stations is determined by increasing the service area by 1 000 km with respect to the aeronautical mobile service (terrestrial) or 500 km with respect to terrestrial services other than the aeronautical mobile service	NOTE – For RDSS earth stations, a uniform coordination distance of 400 km corresponding to an airborne earth station shall be used. In cases where the earth stations are all ground-based, a coordination distance of 100 km shall be used

No. **S9.17A** GSO, non-GSO/ GSO, non-GSO	A specific earth station in respect of other earth stations operating in the opposite direction of transmission in frequency bands allocated with equal rights to space radiocommunication services in both directions of transmission, where the coordination area of the earth station includes the territory of another country or the earth station is located within the coordination area of a coordinated earth station, with the exception of the frequency bands subject to the Plans in Appendix **S30A**	Any frequency band allocated to a space service	The coordination area of the earth station covers the territory of another administration or the earth station is located within the coordination area of an earth station	i) For bands in Table S5-2, see § 2 of Annex 1 of this Appendix ii) See Recommendations ~~ITU-R IS.847, ITU-R IS.848 and ITU-R IS.849~~ITU-R SM.XX	

Reasons: Update references to recommendations dealing with determination of coordination areas.

ANNEX 1

MOD USA/12/14

TABLE 2

Earth stations operating at frequencies in the 1-3 GHz range

Frequency sharing situation		**Coordination distance (in sharing situations involving services allocated with equal rights) (km)**
Frequency band and earth station for which coordination area is determined	**Other service or station (station in terrestrial service or earth station)**	
Ground-based mobile (NOTE 1) (GSO network)	Ground-based stations in terrestrial services	Determined using Recommendation ITU-R ~~IS.847~~ SM.XX with the parameters specified therein for terrestrial stations and all applicable equations and figures
Ground-based mobile (NOTE 1) (non-GSO network)	Ground-based stations in terrestrial services	~~The methodology of~~Determined using Recommendation ITU-R ~~IS.849~~SM.XX ~~is applied in conjunction with Recommendation ITU-R IS.847 (see above)~~

NOTE 1 – Recommendation ITU-R ~~IS.847~~SM.XX supplies the necessary terrestrial station parameters for the bands 1 492-1 530 MHz, 1 555-1 559 MHz, 1 610-1 645.5 MHz, 1 646.5-1 660 MHz, 1 675-1 710 MHz, 1 980-2 025 MHz, 2 160-2 200 MHz, 2 483.5-2 520 MHz, and 2 655-2 690 MHz.

Reasons: Update references to recommendations dealing with determination of coordination areas.

MOD USA/12/15

TABLE 3

Non-GSO MSS feeder-link earth stations

Frequency sharing situation		**Coordination distance (in sharing situations involving services allocated with equal rights)**
Frequency band and earth station for which coordination area is determined	**Other service or station (station in terrestrial service or earth station)**	
19.3-19.7 GHz and 29.1-29.5 GHz; earth station operating co-directionally with other earth stations	Ground-based stations in terrestrial services	Determined using Recommendations ~~ITU-R IS.847 and~~ ITU-R ~~IS.849~~SM.XX with the parameters specified therein for terrestrial stations and all applicable equations and figures.

Reasons: Update references to recommendations dealing with determination of coordination areas.

MOD USA/12/16

TABLE 4

Non-GSO FSS earth stations

Frequency sharing situation		**Coordination distance**
Frequency band and earth station for which coordination area is determined	**Other service or station (station in terrestrial service or earth station)**	**(in sharing situations involving services allocated with equal rights)**
18.9-19.3 GHz and 28.7-29.1 GHz; earth station operating co-directionally with other earth stations	Ground-based stations in terrestrial services	Determined using Recommendations ~~ITU-R IS.847 and~~ ITU-R ~~IS.849~~SM.XX with the parameters specified therein for terrestrial stations and all applicable equations and figures.

Reasons: Update references to recommendations dealing with determination of coordination areas.

A proposal for the suppression of Resolution 60

Background information

A proposal for the suppression of Resolution **60** is being submitted because this Resolution is no longer needed.

SUP USA/12/17

RESOLUTION 60

Relating to information on the propagation of radio waves used in the determination of the coordination area

Reasons: WP 3M provided updated propagation material to TG 1/6. Resolution no longer required.

Proposals for agenda item 1.4

"to consider issues concerning allocations and regulatory aspects related to Resolutions **126 (WRC-97), 128 (WRC-97)**, **129 (WRC-97)**, **133 (WRC-97)**, **134 (WRC-97)** and **726 (WRC-97)**"

A proposal concerning high-density applications in the fixed service

Background information

WRC-97, in its realignment of the 50.2-71 GHz spectral region, placed a primary allocation to the fixed service in the frequency band 55.78-59 GHz. Footnote **S5.547** and Resolution **726 (WRC-97)** indicate that this band (among others) is available for high-density applications in the fixed service.

With respect to 55.78-59 GHz, Resolution **726 (WRC-97)** resolves that administrations should take into account that this band is available for high-density application in the fixed service, when considering allocations or other regulatory provisions in relation to this band and requests ITU-R:

– to undertake studies leading to the identification of system characteristics of high-density systems in the fixed service in 55.78-59 GHz; and

– to undertake, as a matter of urgency, studies of technical and operational criteria and of methods to facilitate sharing between high-density systems in the fixed service and other services in 55.78-59 GHz.

Based upon study results contained within Recommendation ITU-R SA.1279, sharing is feasible between the EESS passive and the HDFS provided that the parameters assumed in the Recommendation are not exceeded. Additionally, the current state of the art out put power of a HDFS system is limited to a maximum of approximately –31.5 dBW/MHz.

Section IV – Table of Frequency Allocations

MOD USA/12/18

55.78-66 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
55.78-~~56.9~~56.26	EARTH EXPLORATION-SATELLITE (passive) FIXED ADD S5.EESS INTER-SATELLITE S5.556A MOBILE S5.558 SPACE RESEARCH (passive) S5.547 S5.557	

MOD USA/12/19

56.26-56.9	EARTH EXPLORATION-SATELLITE (passive) FIXED ADD S5.547 INTER-SATELLITE S5.556A MOBILE S5.558 SPACE RESEARCH (passive) S5.547 S5.557

ADD USA/12/20

S5.EESS Within the band 55.78-56.26 GHz, the maximum e.i.r.p. of the FS is limited to –28.5 dBW/MHz in order to protect stations in the EESS passive service.

Reasons: ITU-R studies have shown that, without limitations on the power of high-density applications in the fixed service in the band 55.78-56.26 GHz, unacceptable interference may occur to passive sensors on board earth exploration satellites.

MOD USA/12/21

RESOLUTION 726 (WRC-~~97~~2000)

Frequency bands above 30 GHz available for high-density applications in the fixed service

The World Radiocommunication Conference (~~Geneva, 1997~~Istanbul, 2000),

considering

a) that there is a dramatically increasing demand for high-density applications in the fixed service resulting from the deployment of new mobile networks and from the rapid worldwide deregulation in the provision of local broadband services, including multimedia;

b) that the frequency range from 30 GHz to about 50 GHz is the range preferred to satisfy initial requirements, as indicated in *considering a)*, while the bands above about 50 GHz are preferred for similar applications but which take technical advantage of high atmospheric absorption;

c) that the lower part of the spectrum above 30 GHz has advantages for the fixed service in areas where longer path lengths are necessary;

d) that the 38 GHz band is already heavily used by many administrations for high-density applications in the fixed service;

e) that the needs of other services to which the relevant frequency bands are already allocated must be taken into account;

f) that the band 37-37.5 GHz is being planned for use by the space research service (space-to-Earth) to provide moon-to-Earth and planetary communication links;

g) that the band 37-38 GHz is being planned for use by the space research service to provide space based very long baseline interferometry;

h) that the deployment of high-density applications in the fixed service in some bands potentially presents sharing difficulties with other primary services allocated to the same band, e.g. the fixed-satellite service;

i) that operations in the space services, such as in the fixed-satellite service, in those bands used by high-density applications in the fixed service may lead to sharing difficulties;

j) that there is a need for global harmonization of new and existing allocations of radio frequency bands to facilitate coordination between administrations and encourage development of competitive products, through economies of scale, and the worldwide introduction of new telecommunication services, including the provision of reliable global information infrastructure access at an affordable cost,

resolves

that administrations should take into account that the bands 31.8-33.4 GHz*, 51.4-52.6 GHz, 55.78-59 GHz and 64-66 GHz are available for high-density applications in the fixed service, when considering allocations or other regulatory provisions in relation to these bands~~;~~.

SUP USA/12/22

requests ITU-R

1

2

urges administrations

Reasons: Consequential to the completion of the studies.

* The date of provisional application of this allocation shall be in conformity with Resolution **126 (WRC-97)**.

Proposals for agenda item 1.8

"to consider regulatory and technical provisions to enable earth stations located on board vessels to operate in the fixed-satellite service (FSS) networks in the bands 3 700-4 200 MHz and 5 925-6 425 MHz, including their coordination with other services allocated in these bands"

A proposal for communications by earth stations on board vessels using frequencies allocated to the fixed-satellite service and used by existing space segment in the fixed-satellite service

Background information

This item concerns provision of communications by earth stations on board vessels (ESVs) using frequencies allocated to the fixed-satellite service and used by existing space segment in the fixed-satellite service. These stations operate in three distinct modes: at sea; while stationary in or near port; and in motion approaching or departing from port.

Operations at sea (beyond a certain distance for near-shore coordination) by ESVs in the fixed-satellite service do not present a potential for interference to stations in the fixed service operating in accordance with the 6 GHz FS allocation, and therefore need not be coordinated. Operations while these earth stations are stationary at predetermined points can be coordinated bilaterally with fixed service systems. Technical and regulatory issues concern the potential for interference between in-motion operations by these ESVs operating close to shore and stations in the fixed service both on and offshore.

The studies that have been conducted in ITU-R have illustrated that the values for the minimum distance are principally affected by the interference criteria required to protect the fixed service and the number of passages per unit time by vessels equipped with earth stations. Based on different values for these assumptions, the results of these preliminary studies yielded a range of values for the minimum distance from 100 km to 540 km. It should be noted that studies submitted to the CPM by some administrations suggested values for the minimum distance of 150 km to 370 km. However, there should be a single minimum distance value.

MOD USA/12/23

2 700-4 800 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
	3 500-3 700	
3 600-~~4 200~~3 700	FIXED	
FIXED	FIXED-SATELLITE (space-to-Earth)	
FIXED-SATELLITE (space-to-Earth)	MOBILE except aeronautical mobile	
Mobile	Radiolocation S5.433	
	S5.435	
3 700-4 200	**3 700-4 200**	
FIXED	FIXED	
FIXED-SATELLITE ~~(space-to-Earth)~~ ADD S5.ESV	FIXED-SATELLITE (space-to-Earth) ADD S5.ESV	
Mobile	MOBILE except aeronautical mobile	

Reasons: To establish regulatory and technical provisions for operations of earth stations on board vessels in the fixed-satellite service.

MOD USA/12/24

5 830-7 550 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
5 925-~~6 700~~6 425	FIXED FIXED-SATELLITE (Earth-to-space) ADD S5.ESV MOBILE S5.149 S5.440 S5.458	
6 425-6 700	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE S5.149 S5.440 S5.458	

Reasons: To establish regulatory and technical provisions for operations of earth stations on board vessels in the fixed-satellite service.

ADD USA/12/25

S5.ESV In the frequency bands 3 700-4 200 MHz and 5 925-6 425 MHz, transponders on space stations in the fixed-satellite service may be used, additionally, by earth stations on vessels. Such use is subject to the provisions specified in the procedures of Resolution **ZZZ (WRC-2000)**.

Reasons: To establish regulatory and technical provisions for operations of earth stations on board vessels in the fixed-satellite service.

ADD USA/12/26

RESOLUTION ZZZ (WRC-2000)

Provisions to enable earth stations located on board vessels to operate in fixed-satellite service networks in the bands 3 700-4 200 MHz and 5 925-6 425 MHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that there is a demand for global wideband satellite communication services on vessels;

b) that the technology exists that would permit the use of fixed-satellite services (FSS) networks by earth stations on board vessels (ESVs) operating in the 3 700-4 200 and 5 925-6 425 MHz bands;

c) that ESVs have the potential to cause unacceptable interference to the fixed service (FS) systems in the band 5 925-6 425 MHz;

d) that FS systems have the potential to cause interference to ESVs in the 3 700-4 200 MHz band;

e) that ESVs operating in these bands require considerably less than the full bandwidth in this FSS allocation and only a portion of the visible geostationary arc;

f) that there are a limited number of geostationary FSS systems that have global coverage;

g) that in order to ensure the protection and future growth of the FS, the ESV must operate with certain technical and operational constraints;

h) that administrations may authorize radiocommunication stations on off-shore structures and platforms for which they are responsible;

i) that based on appropriate assumptions a minimum distance can be calculated beyond which the ESV will not have the potential to cause unacceptable interference to the fixed service in this band,

noting

a) that operation within the territorial sea is at the discretion of the administration with territorial authority, in which case the relevant procedures of that administration will apply;

b) that operation of earth stations on vessels from specified fixed points at locations outside the territorial sea but for which an administration has territorial jurisdiction is fully within the FSS,

resolves

1 that the administration that issues the radio licence for the use of ESVs in these bands (licensing administration) shall ensure that such stations do not cause unacceptable interference to stations in the fixed service;

2 that licensing administrations shall ensure that ESVs are capable of operating in compliance with the requirements of this Resolution;

3 that operators of ESVs shall comply with the conditions established by the licensing administration(s);

4 that ESVs shall not claim protection from fixed service station transmissions;

5 that any transmissions from ESVs within a distance 200 km off any given coast shall be based upon the prior agreement of that coastal administration;

6 that the ESV system shall include means of identification and automatic mechanisms to terminate transmissions whenever the station operates outside its pre-authorized geographic (see *resolves* 5) or operational limits;

7 that ESVs shall be equipped so as to enable the licensing administration under the provisions of Article **S18** to verify earth station performance and to accomplish the switch off of the ESV transmission immediately upon request by an administration whose services may be affected;

8 that when ESVs operating beyond the territorial sea but within 200 km of the coast of an administration fail to comply with the terms required by that administration pursuant to *resolves* 3 and 5, then that administration may:

– request the ESV to comply with such terms or cease operation immediately; or

– request the licensing administration to require such compliance or immediate cessation of the operation;

9 that any licensing authority that licenses ESVs shall agree to maintain at all times a point of contact, which shall be published in an ITU circular, that may be contacted by an affected administration seeking assistance pursuant to *resolves* 3 and 5 above.

Proposals for agenda item 1.11

"to consider constraints on existing allocations and to consider additional allocations on a worldwide basis for the non-geostationary (non-GSO) MSS below 1 GHz, taking account the results of ITU studies conducted in response to Resolutions **214 (Rev.WRC-97)** and **219 (WRC-97)**"

A proposal for the Tables of Criteria Applicable to MSS allocations for the non-GSO systems below 1 GHz

Background information

A number of studies have been carried out since MSS allocations for non-GSO satellite systems were first agreed at WARC-92. These have led to ITU-R recommendations which indicate the sharing techniques which are being used by those systems to share with each other and other co-primary services.

The table below (Non-GSO MSS sharing summary) from Recommendation ITU-R M.[YA] "Methods for achieving coordinated use of multiple non-GSO MSS systems below 1 GHz and sharing with other services in existing MSS allocations" summarizes the techniques and recommendations applied to existing MSS allocations. Many of these techniques are being employed in practice successfully.

Non-GSO MSS sharing summary

	Narrow-band	**Wideband**
Fixed and mobile (148-149.9 MHz) (455-456 MHz) and (459-460 MHz in Region 2) (454-455 MHz by footnotes)	Combination: – Dynamic channel avoidance (Rec. ITU-R M.1039) – Low duty cycle – Brief message duration – (Rec. ITU-R M.1185)	Combination: – Low output power density – Brief message duration – Low data rate – Filtering at satellite – Geographical separation
Fixed and mobile (137-138 MHz) (400.15-401 MHz)	Ground level pfd per RR S5.208	Ground level pfd per RR S5.208
Meteorological satellites (137-138 MHz)* (400.15-401 MHz)	Assignment separation	Combination: – Low pfd at ground level – Cross polarization discrimination – Adaptive filter at satellite
Space operations Space research (137-138 MHz)	Channel avoidance	Combination: – Low pfd – Cross polarization discrimination
Space research (400.15-401 MHz)	Channel avoidance	Combination: – Low pfd – Cross polarization discrimination
Meteorological aids (400.15-401 MHz)	Channel avoidance	Combination: – Low pfd – Cross polarization discrimination

The constraints on existing allocations are reflected in the footnotes to the allocations, and in the Annex 1 to Appendix **S5**. These have evolved to their present form since WARC-92, and now reflect a balance with regard to sharing criteria among the primary services concerned.

These constraints have served to provide a basis for implementing non-GSO MSS systems in these bands and at the same time provide protection to other space and terrestrial services. Therefore in respect to the constraints of the MSS in existing allocations below 1 GHz, no further modifications are needed.

ARTICLE S9

Procedure for effecting coordination with or obtaining agreement of other administrations[1, 2, 3, 4, 5]

Section II – Procedure for effecting coordination[8, 9]

Sub-Section IIA – Requirement and request for coordination

NOC USA/12/27

S9.11A *e)* for a station for which the requirement to coordinate is included in a footnote of the Table of Frequency Allocations referring to this provision:

Reasons: No modifications are required to the Tables of Criteria applicable to MSS allocations for the non-GSO systems below 1 GHz as found in No. S9.11A, or to the footnotes containing constraints which apply to the pertinent allocations.

APPENDIX S5

ANNEX 1

1 Coordination thresholds for sharing between MSS (space-to-Earth) and terrestrial services in the same frequency bands and between non-GSO MSS feeder links (space-to-Earth) and terrestrial services in the same frequency bands

1.1 Below 1 GHz*

NOC USA/12/28

1.1.1 In the bands 137-138 MHz and 400.15-401 MHz, coordination of a space station of the MSS (space-to-Earth) with respect to terrestrial services (except aeronautical mobile (OR) service networks operated by the administrations listed in Nos. **S5.204** and **S5.206** as of 1 November 1996) is required only if the pfd produced by this space station exceeds –125 dB (W/m^2/4 kHz) at the Earth's surface.

Reasons: No modifications are required to the Tables of Criteria applicable to MSS allocations for the non-GSO systems below 1 GHz as found in No. S9.11A, or to the footnotes containing constraints which apply to the pertinent allocations.

NOC USA/12/29

1.1.2 In the band 137-138 MHz, coordination of a space station of the MSS (space-to-Earth) with respect to the aeronautical mobile (OR) service is required only if the pfd produced by this space station at the Earth's surface exceeds:

– –125 dB (W/m^2/4 kHz) for networks for which complete Appendix **3** coordination information has been received by the Bureau prior to 1 November 1996;

– –140 dB (W/m^2/4 kHz) for networks for which complete Appendix **S4**/**3** coordination information has been received by the Bureau after 1 November 1996 for the administrations referred to in § 1.1.1 above.

Reasons: No modifications are required to the Tables of Criteria applicable to MSS allocations for the non-GSO systems below 1 GHz as found in No. S9.11A, or to the footnotes containing constraints which apply to the pertinent allocations.

NOC USA/12/30

1.1.3 In the band 137-138 MHz, coordination is also required for a space station on a replacement satellite of a MSS network for which complete Appendix **3** coordination information has been received by the Bureau prior to 1 November 1996 and the pfd exceeds –125 dB(W/m^2/4 kHz) at the Earth's surface for the administrations referred to in § 1.1.1 above.

Reasons: No modifications are required to the Tables of Criteria applicable to MSS allocations for the non-GSO systems below 1 GHz as found in No. S9.11A, or to the footnotes containing constraints which apply to the pertinent allocations.

3.2 General considerations

NOC USA/12/31

TABLE 1

Earth stations operating at frequencies below 1 GHz

Reasons: No modifications are required to the Tables of Criteria applicable to MSS allocations for use by non-GSO systems below 1 GHz, as found in No. S9.11A, or to the footnotes containing constraints which apply to the pertinent allocations.

Proposals for agenda item 1.15.1

"to consider new allocations to the radionavigation-satellite service in the range from 1 to 6 GHz required to support developments"

A proposal for additional radionavigation-satellite service (RNSS) signals near 1 GHz

Background information

Additional radionavigation-satellite service (RNSS) signals will greatly enhance the accuracy, reliability and robustness of the civil global positioning system (GPS) by enabling more effective corrections to be made for the time delay effects of the ionosphere on the signals from space. The International Civil Aviation Organization (ICAO) has stated the requirement for an additional civil signal on GPS to support global navigation satellite system (GNSS) requirements and for space-based augmentation systems. A requirement for aeronautical users is having the protected signal operate within radio spectrum allocated to the aeronautical radionavigation service (ARNS), which would also include the possibility of terrestrial augmentation systems.

The United States has identified a third signal at 1 176.45 MHz to support GNSS developments. The third signal is proposed to be an international civil aviation safety-of-life service signal with a required bandwidth 24 MHz. Technical studies show compatibility between existing operational ARNS systems and the proposed new signal at 1 176.45 MHz. The power levels and signal structure will allow the operation of a relatively large number of co-frequency satellite and terrestrial stations to be in view of an RNSS receiver.

Section IV – Table of Frequency Allocations

MOD USA/12/32

890-1 350 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
960-1 215	AERONAUTICAL RADIONAVIGATION MOD S5.328	

S5.328 The band 960-1 215 MHz is reserved on a worldwide basis for the use and development of airborne electronic aids to air navigation and any directly associated ground-based and satellite-borne facilities. In the 1 164-1 188 MHz portion of this band, the radionavigation-satellite service (space-to-Earth) is also allocated worldwide on a primary basis. In this band stations of the radionavigation-satellite services, but not in the aeronautical radionavigation-satellite service, shall not cause harmful interference to, or claim protection from, stations of the aeronautical radionavigation and aeronautical radionavigation-satellite services.

Reasons: Additional radionavigation-satellite service (RNSS) signals will greatly enhance the accuracy, reliability and robustness of the civil global navigation satellite system (GNSS) by enabling more effective corrections to be made for the time delay effects of the ionosphere on the signals from space.

NOC proposal regarding additional radionavigation-satellite service (RNSS) signals

Background information

The 5 GHz band presents no unique advantages for new RNSS systems and all RNSS requirements can be satisfied by existing and new allocation to be implemented in the 1 200 and 1 600 MHz bands. The increased power required at 5 GHz compared to the lower frequencies makes an allocation for RNSS at 5 GHz questionable because it may not be feasible to implement satellite networks from an economic standpoint.

ITU-R studies to date do not support the need for an allocation for RNSS at 5 GHz. There are a number of unresolved sharing situations at 5 GHz including protection the international microwave landing system (MLS) and mobile-satellite (MS) feeder links now operating at 5 000-5 150 MHz.

There are recognized difficulties in fully protecting existing radio astronomy operations. See the CPM Report, section 2.4.1.3.1: "The separation distance between RNSS (space-to-earth) and the radio astronomy service would be a minimum of 10 MHz to protect radio astronomy inside its allocation. This may cause difficulties due to the radio astronomy receiver sensitivity outside the band allocated to the radio astronomy service."

Studies under Resolution **114 (WRC-95)** are continuing and could result in changes in the future use of the 5 000-5 150 MHz band.

NOC USA/12/33

4 800-5 830 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
5 000-5 150	AERONAUTICAL RADIONAVIGATION S5.367 S5.444 S5.444A	

Reasons: ITU-R studies to date do not support the need for an allocation for RNSS at 5 GHz.

Proposals for agenda item 1.15.2

"to consider the addition of the space-to-space direction to the radionavigation-satellite service allocations in the bands 1 215-1 260 and 1 559-1610 MHz"

A proposal for an allocation for space-to-space use for RNSS to ensure the protection of space-based RNSS receivers

Background information

Radionavigation-Satellite Service (RNSS) systems such as the Global Positioning System and Global Navigation Satellite System are primarily being used in the space-to-Earth direction to provide service to terrestrial users. These systems are, however, also increasingly being used in the space-to-space direction by spaceborne users for such applications as spacecraft three-dimensional positioning and velocity determination; three-axis attitude control; precise time synchronization; precision orbit determination, and atmospheric science. The use of RNSS signals is presently protected only through a space-to-Earth allocation in the 1 215-1 260 and 1 559-1 610 MHz bands. Recognizing current and future operational usage of spaceborne RNSS receivers for scientific and commercial applications, it is important to add the space-to-space direction to the existing RNSS allocations so that these uses can be taken into consideration when changes to the use of these bands are contemplated.

Interference studies have been conducted to assess the sensitivity of spaceborne RNSS receivers to interference from radiolocation, Earth exploration-satellite (active), space research (active), fixed, mobile and aeronautical radionavigation services in the 1 215-1 260 MHz band; from the aeronautical radionavigation and fixed services in the 1 559-1 610 MHz band; and also their sensitivity to intra-service interference between radionavigation-satellite service systems in these two bands.

The ITU-R has concluded that the addition of a space-to-space direction to the 1 215-1 260 MHz and 1 559-1 610 MHz RNSS bands will not cause any additional interference to other services since it involves no change to the space-to-Earth transmissions.

Studies demonstrate that RNSS spaceborne receivers can operate satisfactorily in the presence of interference caused by systems in other services as well as other RNSS systems. Potential interference from services in adjacent bands was also examined.

Existing coordination procedures are adequate for space-to-space operations.

MOD USA/12/34

890-1 350 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 215-1 240	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) S5.329 SPACE RESEARCH (active) S5.330 S5.331 S5.332	

MOD USA/12/35

1 240-1 260	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) S5.329 SPACE RESEARCH (active) Amateur S5.330 S5.331 S5.332 S5.334 S5.335

Reasons: Provide an allocation for space-to-space use for RNSS, which will ensure the protection of space-based RNSS receivers.

MOD USA/12/36

1 525-1 610 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 559-1 610	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) S5.341 S5.355 S5.359 S5.363	

Reasons: Provide an allocation for space-to-space use for RNSS, which will ensure the protection of space-based RNSS receivers.

Proposals for agenda item 1.16

"to consider allocations of frequency bands above 71 GHz to the Earth-exploration satellite (passive) and radio astronomy services, taking into account Resolution **723 (WRC-97)**"

A proposal to modify the allocations above 71 GHz

Background information

The following proposals modify many of the Table of Frequency Allocations above 71 GHz to accommodate the requirements of the radio astronomy and Earth-exploration satellite (passive) services, while giving consideration to the needs of other services. The modifications to the Table of Frequency Allocations maintain the aggregate amount of spectrum allocated to the displaced services (including the fixed-satellite service), provide frequency blocks 5-9 GHz wide to accommodate future wideband multimedia systems while taking into account differences in atmospheric attenuation, and provide appropriate separation between services.

Resolutions XXX and YYY address the need for future study between co-allocated active services and between active and passive services at such a time when the technical characteristics of the active services become known. Also, the United States may submit at a later date a corrigendum to this proposal addressing allocations to active services within the bands 71-86 GHz.

MOD USA/12/37

66-86 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
71-74	FIXED FIXED-SATELLITE ~~(Earth-to-space)~~(space-to-Earth) MOBILE MOBILE-SATELLITE ~~(Earth-to-space)~~(space-to-Earth) ~~S5.149 S5.556~~	

Reasons: MSS and FSS uplinks and downlinks in 71-74 GHz and 81-84 GHz bands have been interchanged to avoid satellite downlinks in bands needed by RAS. Atmospheric absorption is only slightly higher in 71-74 GHz band than in 81-84 GHz band. The RAS footnotes S5.149 and S5.556 have been deleted in favour of allocations above 76 GHz. The reference to the 72.77-72.91 GHz band in footnotes S5.149 and S5.556 has been deleted.

MOD USA/12/38

66-86 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
74-75.5	BROADCASTING-SATELLITE FIXED FIXED-SATELLITE ~~(Earth-to-space)~~(space-to-Earth) MOBILE Space research (space-to-Earth) MOD S5.561	

MOD USA/12/39

75.5-76	~~AMATEUR~~ ~~AMATEUR-SATELLITE~~ BROADCASTING-SATELLITE FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Space research (space-to-Earth) MOD S5.561 ADD S5.EEE

Reasons: BSS, which is currently allocated to the 84-86 GHz band, has been relocated to this band to protect RAS above 76 GHz. Atmospheric absorption is only slightly higher in 74-76 GHz band than in 84-86 GHz band. Amateur and amateur-satellite allocations have been shifted to 80.5-81 GHz. The new footnote S5.EEE protects existing amateur and amateur-satellite operations in the 75.5-76 GHz band until the year 200[X]. The FSS (Earth-to-space) allocation has been moved to 84-86 GHz band. The proposed allocations in the 74-84 GHz range preserve a contiguous 10 GHz space research downlink (secondary), which is required for space VLBI purposes. The footnote S5.561 has been modified to recognize the change in BSS allocation.

MOD USA/12/40

66-86 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
76-~~81~~77.5	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) ~~S5.560~~MOD S5.149	

MOD USA/12/41

77.5-78	AMATEUR AMATEUR-SATELLITE ~~RADIOLOCATION~~ ~~Amateur~~ ~~Amateur-satellite~~ Radio astronomy Space research (space-to-Earth) ~~S5.560~~MOD S5.149

MOD USA/12/42

78-81	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) ~~S5.560~~MOD S5.149

Reasons: The existing 76-81 GHz band has been divided into three sub-bands. The addition of a radio astronomy allocation and RES RAS satisfies the requirements for radio astronomy spectral line and wideband continuum observations from remote locations worldwide in both the 76-77.5 GHz and 78-81 GHz bands. Radio astronomy is added as a secondary allocation in the 77.5-78 GHz band. Amateur and amateur-satellite services are shifted by 0.5 GHz, to accommodate BS, FSS and MSS downlinks at the lower portion of atmospheric window, and to avoid sharing with vehicular radars, which some administrations have authorized to operate in the 76-77 GHz band. There is no change in sharing between services, except for introduction of RAS allocation in the upper and lower sub-bands. These bands have been added to those listed under S5.149. The footnote S5.560 is deleted from the 76-77.5 and 77-78 GHz sub-bands, where it does not apply.

MOD USA/12/43

66-86 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
81-84	FIXED FIXED-SATELLITE ~~(space-to-Earth)~~(Earth-to-space) MOBILE ~~MOBILE-SATELLITE (space-to-Earth)~~ MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY Space research (space-to-Earth) MOD S5.149 ADD S5.DDD	

Reasons: The directions of MSS and FSS downlinks have been reversed to allow radio astronomy observations. The uplinks are paired with the 71-74 GHz downlinks. The addition of a radio astronomy allocation and RES RAS satisfies the requirements for radio astronomy spectral line and wideband continuum observations from remote locations worldwide. Footnote S5.DDD has been added to maintain the current amount of secondary amateur and amateur-satellite spectrum. This band has been added to footnote S5.149.

MOD USA/12/44

66-86 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
84-86	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE BROADCASTING ~~BROADCASTING-SATELLITE~~ RADIO ASTRONOMY MOD S5.149~~S5.561~~	

Reasons: The broadcasting-satellite allocation has been relocated to the 74-76 GHz band. The direction of satellite downlinks has been reversed to allow radio astronomy observations. The uplink has been paired with 74-76 GHz downlink. The addition of a radio astronomy allocation and RES RAS satisfies the requirements for radio astronomy spectral line and wideband continuum

observations from remote locations worldwide. This band has been added to footnote S5.149. The S5.561 footnote is no longer relevant to this band; appropriately modified it now applies to the 74-75.5 GHz and 75.5-76 GHz bands.

MOD USA/12/45

86-119.98 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
86-92	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340	

Reasons: This band is of crucial importance to the RAS, SR (passive) and EES (passive) services; it is the window for the band around 118.75 GHz. No active services are acceptable in this band and no change in current allocations is feasible.

MOD USA/12/46

86-119.98 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
92-94	FIXED ~~FIXED-SATELLITE (Earth-to-space)~~ MOBILE RADIO ASTRONOMY RADIOLOCATION MOD S5.149 ~~S5.556~~	

Reasons: The addition of a radio astronomy allocation and RES RAS satisfies the requirements for radio astronomy spectral line and wideband continuum observations from remote locations worldwide. Previously, radio astronomy interest was recognised via footnote S5.556. The FSS (Earth-to-space) allocation, no longer needed to balance 102-105 GHz allocation, has been relocated to 71-76 GHz band. This band has been added to those listed under S5.149. Footnote S5.556 has been deleted from this band, as it is no longer necessary.

MOD USA/12/47

86-119.98 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
94-94.1	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio astronomy S5.562	

Reasons: The radio astronomy service is secondary to the active services. No change in sharing between services is proposed, except for introduction of the RAS allocation in this band.

MOD USA/12/48

86-119.98 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
94.1-95	FIXED ~~FIXED-SATELLITE (Earth-to-space)~~ MOBILE RADIO ASTRONOMY RADIOLOCATION MOD S5.149	

Reasons: The addition of a radio astronomy allocation and RES RAS satisfies the requirements for radio astronomy spectral line and wideband continuum observations from remote locations worldwide. No change in sharing between existing services, except for introduction of RAS allocation in band. The FSS (Earth-to-space) allocation, no longer needed to balance 102-105 GHz, has been relocated to 71-76 GHz band. Footnote S5.556 is deleted, as it is not relevant to this band (should have been suppressed consequential to WRC-97 actions). This band has been added to those listed under S5.149.

MOD USA/12/49

86-119.98 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
95-100	FIXED MOBILE ~~MOBILE-SATELLITE~~ RADIO ASTRONOMY RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE ~~Radiolocation~~ MOD S5.149 MOD S5.553 MOD S5.554 ~~S5.555~~	

Reasons: The addition of a radio astronomy allocation and RES RAS satisfies the requirements for radio astronomy spectral line and wideband continuum observations from remote locations worldwide. Radiolocation has been upgraded to primary, consequential to the addition of radio astronomy as a primary service. The mobile-satellite service is deleted, as it can not share with the radiolocation service. This band has been added to those listed under S5.149. Footnote S5.555, which allocates the 97.88-98.08 GHz sub-band to the RAS on a primary basis has been deleted, and the band has been deleted from footnote S5.555. Footnote S5.553 has been modified to include stations in the fixed service.

MOD USA/12/50

86-119.98 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
100-102	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.149 S5.341	

Reasons: The addition of a radio astronomy allocation and RES RAS satisfies the requirements for radio astronomy spectral line and wideband continuum observations from remote locations worldwide. There is no change in sharing between services, except for introduction of RAS allocation in band. This band is used by EES (passive) for limb sounding of atmospheric constituents (NO line at 100.49 GHz). This band added to those listed under S5.149.

MOD USA/12/51

86-119.98 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
102-105	FIXED ~~FIXED-SATELLITE (space-to-Earth)~~ MOBILE RADIO ASTRONOMY MOD S5.149 S5.341	

Reasons: The FSS allocation has been moved to 74-76 GHz band, to eliminate downlinks in the middle of the atmospheric window needed for radio astronomy observations. Atmospheric absorption in these two windows is similar. The addition of a radio astronomy allocation and RES RAS satisfies the requirements for radio astronomy spectral line and wideband continuum observations from remote locations worldwide. This band has been added to those listed under S5.149.

MOD USA/12/52

86-119.98 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
105-~~116~~109.5	~~EARTH EXPLORATION-SATELLITE (passive)~~ FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) ADD S5.CCC MOD S5.149~~S5.340~~ S5.341	

Reasons: The 105-116 GHz range has been divided into four sub-bands to make additional spectrum available for other services and to adjust other passive allocations to areas of the spectrum that are more appropriate to meet scientific needs. Passive sensors have no known use for, and do

not need the band 105-109.5 GHz, so they have been deleted. Fixed and mobile services have been added, relocated from 116-122.5 GHz band, where deletion of these services is needed to protect essential passive sensor operations. Since this band is no longer passive in nature, footnote S5.340 should be deleted. This band is added to those included under S5.149, to reflect the need to protect radio astronomy in a band that is no longer passive. Footnote S5.CCC is added to limit space research (passive) allocation to space-based radio astronomy in this band.

MOD USA/12/53

86-119.98 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
109.5-111.8	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340 S5.341	

Reasons: It is essential to maintain this passive band. The MOD refers to the band limits only; no change (NOC) is proposed to the allocations within this sub-band. This band contains an ozone line at 110.8 GHz, which is used for microwave limb sounding. The entire band is of vital importance to radio astronomy for observations of the CO lines at 109.8 and 110.2 GHz, and continuum observations.

MOD USA/12/54

86-119.98 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
111.8-114.25	~~EARTH EXPLORATION-SATELLITE (passive)~~ FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) ADD S5.CCC MOD S5.149~~S5.340~~ S5.341	

Reasons: Passive sensors do not need the band 111.8-114.25 GHz and have been deleted. Fixed and mobile services are added to this band, they were relocated from the 116-122.5 GHz band where deletion of these services is needed to protect essential passive sensor operations. This band is added to those included under S5.149 to reflect the need to protect radio astronomy in a band that is no longer passive. The addition of the new footnote S5.CCC limits the space research (passive) allocation to space-based radio astronomy in this band.

MOD USA/12/55

86-119.98 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
114.25-116	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340 S5.341	

Reasons: It is essential to maintain this passive band. The MOD refers to the band limits only; no change (NOC) is proposed to the allocations within this sub-band. The band 114.25-116 GHz is of vital importance to radio astronomy for observations of the 115.3 GHz CO line and is the first portion of the 114.25-122.25 GHz oxygen absorption band which is required for remote sensing, with a peak at 118.75 GHz.

MOD USA/12/56

86-119.98 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
116-119.98	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ INTER-SATELLITE ADD S5.XXX ~~MOBILE S5.558~~ SPACE RESEARCH (passive) S5.341	

MOD USA/12/57

119.98-158 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
119.98-120.02	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ INTER-SATELLITE ADD S5.XXX ~~MOBILE S5.558~~ SPACE RESEARCH (passive) ~~Amateur~~ S5.341	

MOD USA/12/58

120.02-~~126~~122.25	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ INTER-SATELLITE ADD S5.XXX ~~MOBILE S5.558~~ SPACE RESEARCH (passive) S5.138

Reasons: This band is of crucial importance for passive sensing, as it is comprised the majority of the necessary 114.25-122.25 GHz band, the oxygen absorption band, with its peak at 118.75 GHz. The fixed and mobile services have been moved down to 105-109.5 GHz and 111.8-114.25 GHz, as sharing with passive sensors would severely restrict these services in this portion of the spectrum. The inter-satellite service needs to be limited by footnote S5.XXX to links between GSO satellites only, with pfd limits as specified in sharing studies in order to share the band 116-122.25 GHz with passive sensors. The secondary allocation to amateur services in the band 119.98-120.02 GHz is also moved to 122.5-123 GHz band to avoid interference to passive sensors.

MOD USA/12/59

119.98-158 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
122.25-123	~~EARTH EXPLORATION-SATELLITE (passive)~~ FIXED INTER-SATELLITE MOBILE MOD S5.558 ~~SPACE RESEARCH (passive)~~ AMATEUR S5.138	

Reasons: The passive sensor allocations have been deleted from this band, as they are not needed for remote sensing applications. A secondary amateur service allocation has been added to compensate for the deletion of their allocation in the 119.98-120.02 GHz band.

MOD USA/12/60

119.98-158 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
123-126	~~EARTH EXPLORATION-SATELLITE (passive)~~ FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE MOD S5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE ~~SPACE RESEARCH (passive)~~ Radio astronomy ~~S5.138~~	

Reasons: This band is not required for passive sensor operations and those allocations have been deleted. Satellite downlinks from the 141-153 GHz band have been moved to the 123-130 GHz band to avoid interference to the radio astronomy service. The radio astronomy service is added on a secondary basis, for possible use in wideband continuum observations. Sharing conditions between the ISS and the FSS, MSS, RNS and RNSS services need to be developed, but no imminent use of the band by these services is contemplated. The MSS directional indicator has been left undefined. Footnotes S5.138 and S5.341 do not apply to this band due to changed band limit, and are consequentially deleted.

MOD USA/12/61

119.98-158 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
126-~~134~~130	~~FIXED~~ FIXED-SATELLITE (space-to-Earth) ~~INTER-SATELLITE~~ ~~MOBILE S5.558~~ MOBILE-SATELLITE ~~RADIOLOCATION S5.559~~ RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy MOD S5.554	

Reasons: Satellite downlinks from the 141-153 GHz band have been moved to the 123-130 GHz band to avoid interference to the radio astronomy service. The radio astronomy service is added on a secondary basis for spectral line and wideband continuum observations. The fixed, mobile, inter-satellite and radiolocation allocations have been relocated to improve sharing situations. Sharing conditions between the FSS, MSS, RNS and RNSS services need to be developed, but no imminent use of the band by these services is contemplated. The MSS directional indicator has been left undefined. Footnote S5.554 has been modified to include this band.

MOD USA/12/62

119.98-158 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
130-134	FIXED INTER-SATELLITE MOBILE MOD S5.558 RADIO ASTRONOMY ~~RADIOLOCATION S5.559~~ MOD S5.149	

Reasons: The addition of a radio astronomy allocation and RES RAS satisfies the requirements for radio astronomy spectral line and wideband continuum observations from remote locations worldwide. Sharing conditions between the RAS and the ISS need to be developed. Footnote S5.558 is modified to reflect new mobile service band limit. Radiolocation service has been relocated, to improve sharing conditions.

MOD USA/12/63

119.98-158 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
134-~~142~~136	AMATEUR AMATEUR-SATELLITE ~~MOBILE S5.553~~ ~~MOBILE-SATELLITE~~ ~~RADIONAVIGATION~~ ~~RADIONAVIGATION-SATELLITE~~ Radio astronomy ~~Radiolocation~~ ~~S5.149 S5.340 S5.554 S5.555~~	

Reasons: The amateur and amateur-satellite services are moved here from the 142-144 GHz band to avoid interference to radio astronomy at higher frequencies. Radio astronomy is added as secondary service. All footnotes are deleted, as they no longer apply to this band.

MOD USA/12/64

119.98-158 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
136-141	~~MOBILE S5.553~~ ~~MOBILE-SATELLITE~~ RADIO ASTRONOMY RADIOLOCATION ~~RADIONAVIGATION~~ ~~RADIONAVIGATION-SATELLITE~~ Amateur Amateur-satellite ~~Radiolocation~~ MOD S5.149 ~~S5.340 S5.554 S5.555~~	

Reasons: Services currently allocated to the 144-149 GHz band are moved to this band to facilitate realignment. The addition of a radio astronomy allocation and RES RAS satisfies the requirements for radio astronomy spectral line and wideband continuum observations from remote locations worldwide. This band added to those listed under S5.149. Since this band is no longer passive, it is removed from S5.340. Footnote S5.554 no longer applies to this band and is deleted. Footnote S5.555 is no longer needed, as the radio astronomy service is allocated on a primary basis in the entire 136-141 GHz band.

MOD USA/12/65

119.98-158 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
141-142	FIXED MOBILE ~~S5.553~~ ~~MOBILE-SATELLITE~~ RADIO ASTRONOMY RADIOLOCATION ~~RADIONAVIGATION~~ ~~RADIONAVIGATION-SATELLITE~~ ~~Radiolocation~~ MOD S5.149 ~~S5.340 S5.554 S5.555~~	

MOD USA/12/66

142-144	~~AMATEUR~~ ~~AMATEUR-SATELLITE~~ FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION MOD S5.149	

MOD USA/12/67

144-~~149~~148.5	FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION ~~Amateur~~ ~~Amateur-satellite~~ MOD S5.149 ~~S5.555~~	

Reasons: Allocations are transferred to the 141-148.5 GHz band from the 126-134 GHz band to allow for radio astronomy allocations in this band. The bandwidth has been reduced to 7.5 GHz to accommodate EES (passive) and SR (passive) requirements in the 148.5-151.5 GHz band. The addition of a radio astronomy allocation and RES RAS satisfies the requirements for radio astronomy spectral line and wideband continuum observations from remote locations worldwide. Since the 141-142 GHz sub-band is no longer passive, S5.340 is deleted from that band and modified accordingly. All sub-bands are added to those listed under S5.149. Footnotes S5.554 and S5.555 no longer apply to any portion of this band and are deleted and modified accordingly.

MOD USA/12/68

119.98-158 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
148.5-149	~~RADIOLOCATION~~ EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) ~~Amateur~~ ~~Amateur-satellite~~ ~~S5.149 S5.555~~MOD S5.340	

MOD USA/12/69

149-150	~~FIXED~~ ~~FIXED-SATELLITE (space-to-Earth)~~ ~~MOBILE~~ EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340

MOD USA/12/70

150-151	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ ~~FIXED-SATELLITE (space-to-Earth)~~ ~~MOBILE~~ RADIO ASTRONOMY SPACE RESEARCH (passive) ~~S5.149 S5.385~~MOD S5.340

MOD USA/12/71

151-~~156~~151.5	~~FIXED~~ ~~FIXED-SATELLITE (space-to-Earth)~~ ~~MOBILE~~ EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340

Reasons: The current passive allocation of 150-151 GHz has insufficient bandwidth for remote sensing observations and is not adequately protected from potential interference. The scientific requirement is for a 3 GHz band centred at 150 GHz for use in conjunction with water vapour observations around 183 GHz. Also, the 150.74 GHz nitrous oxide line at required for microwave limb sounding applications. All active services are relocated from this band to meet these requirements. Since the 148.5-151.5 GHz band is now purely passive, it is added to those listed under S5.340. For the same reason, there is no need to include the band 150-151 GHz in S5.149, and it is deleted from this footnote. Footnotes S5.385 (150-151 GHz band) and S5.555 (148.5-149 GHz band) are no longer needed and are deleted from these bands.

MOD USA/12/72

119.98-158 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
151.5-155.5	FIXED ~~FIXED-SATELLITE (space-to-Earth)~~ MOBILE RADIO ASTRONOMY RADIOLOCATION MOD S5.149	

Reasons: The FSS downlink allocation is incompatible with radio astronomy requirements in this band and is relocated elsewhere. The addition of a radio astronomy allocation and RES RAS satisfies the requirements for radio astronomy spectral line and wideband continuum observations from remote locations worldwide. This band is added to those listed under footnote S5.149. The additional radiolocation allocation compensates for removal from the 126-134 GHz band.

MOD USA/12/73

119.98-158 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
155.5-156	EARTH EXPLORATION-SATELLITE (passive) ADD S5.AAA FIXED ~~FIXED-SATELLITE (space-to-Earth)~~ MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) ADD S5.CCC MOD S5.149 ADD S5.BBB	

MOD USA/12/74

156-158	EARTH EXPLORATION-SATELLITE (passive) ADD S5.AAA FIXED ~~FIXED-SATELLITE (space-to-Earth)~~ MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) ADD S5.CCC MOD S5.149 ADD S5.BBB	

MOD USA/12/75

158-202 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
158-~~164~~158.5	EARTH EXPLORATION-SATELLITE (passive) ADD S5.AAA FIXED ~~FIXED-SATELLITE (space-to-Earth)~~ MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) ADD S5.CCC MOD S5.149 ADD S5.BBB	

Reasons: The scientific requirement is for a 3 GHz band centred at 157 GHz for use in conjunction with water vapour observations around 183 GHz. This allocation is only required until 2018 since current planned and operational instruments are already in this band. By 2018, all of these applications will have transitioned to the 148.5-151.5 GHz band. The FSS downlink allocation is incompatible with radio astronomy requirements and is relocated. The addition of a radio astronomy allocation and RES RAS satisfies the requirements for radio astronomy spectral line and wideband continuum observations from remote locations worldwide. These sub-bands are added to those listed under S5.149. EES operations in the band 155.5-158.5 GHz need to be protected until 01/01/2018. After this date the fixed and mobile services need to coordinate with radio astronomy sites only. The space research (passive) allocation is limited to space-based radio astronomy in this band.

MOD USA/12/76

158-202 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
158.5-164	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	

Reasons: Mobile-satellite allocation has been added to partially compensate for loss of 134-142 GHz band.

MOD USA/12/77

158-202 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
164-~~168~~167	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340	

Reasons: Passive sensors require only this 3 GHz band from the current 164-168 GHz passive allocation. It is essential to maintain the 164-167 GHz portion of the band passive. The MOD refers to the band limits and addition of the band to footnote S5.340 only, no change (NOC) is proposed to the allocations within this sub-band. This band, along with the band 148.5-151.5 GHz will become

the harmonized reference window for passive sensor observations of the 183.31 GHz water vapour line. The band is also used for microwave limb sounding of the 164.38 GHz ClO line. This passive band has been added to those listed under S5.340; the 164-168 GHz band had been omitted from S5.340.

MOD USA/12/78

158-202 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
167-**168**	~~EARTH EXPLORATION-SATELLITE (passive)~~ FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE MOD S5.558 ~~RADIO ASTRONOMY~~ ~~SPACE RESEARCH (passive)~~	

MOD USA/12/79

168-170	FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE MOD S5.558

MOD USA/12/80

170-174.5	FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE MOD S5.558 ~~S5.149 S5.385~~

MOD USA/12/81

174.5-~~**176.5**~~**174.8**	~~EARTH EXPLORATION-SATELLITE (passive)~~ FIXED INTER-SATELLITE MOBILE MOD S5.558 ~~SPACE RESEARCH (passive)~~ ~~S5.149 S5.385~~

Reasons: Passive services do not need the 167-168 GHz band and this band is yielded to displaced active services. Fixed, mobile and inter-satellite services are added to the 167-174.8 GHz band as well as fixed-satellite downlinks to the 167-174.5 GHz band to compensate for deletions in other bands. Passive sensor allocations are deleted from the 174.5-174.8 GHz band to properly adjust the band edge for the 183.3 GHz remote sensing requirement. Footnotes S5.149 and S5.385 are deleted from these bands and are appropriately modified. Footnote S5.558 is added next to mobile allocations in this band and the footnote is modified to include the 167-174.8 GHz band due to sharing with the inter-satellite service.

MOD USA/12/82

158-202 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
174.8-176.5	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ INTER-SATELLITE ADD S5.YYY ~~MOBILE S5.558~~ SPACE RESEARCH (passive) ~~S5.149 S5.385~~	

MOD USA/12/83

176.5-182	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ INTER-SATELLITE ADD S5.YYY ~~MOBILE S5.558~~ SPACE RESEARCH (passive) ~~S5.149 S5.385~~

MOD USA/12/84

182-185	EARTH EXPLORATION-SATELLITE (passive) ~~RADIO ASTRONOMY~~ SPACE RESEARCH (passive) MOD S5.340 S5.563

MOD USA/12/85

185-190	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ INTER-SATELLITE ADD S5.YYY ~~MOBILE S5.558~~ SPACE RESEARCH (passive) ~~S5.149 S5.385~~

MOD USA/12/86

190-~~200~~191.8	EARTH EXPLORATION-SATELLITE (passive) ~~MOBILE S5.553~~ ~~MOBILE-SATELLITE~~ ~~RADIONAVIGATION~~ ~~RADIONAVIGATION-SATELLITE~~ SPACE RESEARCH (passive) ~~S5.341 S5.554~~MOD S5.340

Reasons: The band 174.8-191.8 GHz is of crucial importance for passive sensing of the water vapour absorption line whose peak is at 183.31 GHz. Sharing with fixed and mobile services is not practical, so these services are relocated. The inter-satellite service needs to be limited to links between GSO satellites and to a pfd limit as specified in sharing studies. Footnote S5.YYY is added to reflect this requirement. The entire band is deleted from those listed under S5.149, S5.385 (secondary radio astronomy allocation). All applicable footnotes are appropriately modified. Since no terrestrial radio astronomy use of the band 182-185 GHz is possible due to high atmospheric absorption, the radio astronomy allocation is deleted. Active services are moved from the

190-191.8 GHz band to make room for the addition of passive sensor allocations. Footnote S5.554 is deleted from this band to reflect removal of active services, and modified to reflect this change. S5.341 does not apply to this band and is deleted. Footnote S5.340 has been modified to include this band.

MOD USA/12/87

158-202 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
191.8-200	FIXED INTER-SATELLITE MOBILE MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE S5.34 MOD S5.553 MOD S5.554	

Reasons: Inter-satellite and fixed service allocations added to compensate for deletions from other bands. The footnotes S5.553 and S5.554 modified to reflect deletion of terrestrial services from 190.0-191.8 GHz band, and to include stations in the fixed service, allocated to the 191.8-200 GHz band.

MOD USA/12/88

158-202 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
200-202	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ ~~MOBILE~~ RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340 S5.341	

MOD USA/12/89

202-~~400~~1 000 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
202-209	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ ~~FIXED-SATELLITE (Earth-to-space)~~ ~~MOBILE~~ RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340 S5.341	

Reasons: This band is the optimum band for microwave limb sounding of water vapour and other atmospheric constituents in the low troposphere. Fixed and mobile services as well as the fixed-satellite uplink in the 202-209 GHz band are all relocated to meet this requirement. Footnote S5.340

is consequentially modified, to include this band. A radio astronomy allocation has been added to satisfy the requirement for radio astronomy spectral line and wideband continuum observations.

MOD USA/12/90

202-~~400~~1 000 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
209-217	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY MOD S5.149 S5.341	

Reasons: The addition of a radio astronomy allocation and RES RAS satisfies the requirements for radio astronomy spectral line and wideband continuum observations from remote locations worldwide. This band has been added to those listed under S5.149.

MOD USA/12/91

202-~~400~~1 000 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
217-~~231~~226	~~EARTH EXPLORATION-SATELLITE (passive)~~ FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) ADD S5.CCC ~~S5.340~~MOD S5.149 S5.341	

Reasons: Passive sensors do not need this band and the EESS allocation is deleted. Fixed and mobile services and fixed-satellite uplinks are moved to this band from other locations. This band is no longer passive; consequentially it now needs to be listed under footnote S5.149. This band has been removed from footnote S5.340 and footnote S5.340 has been deleted from this band.

MOD USA/12/92

202-~~400~~1 000 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
226-231	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340 ~~S5.341~~	

MOD USA/12/93

202-~~400~~1 000 GHz

231-~~235~~231.5	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ ~~FIXED-SATELLITE (space-to-Earth)~~ ~~MOBILE~~ RADIO ASTRONOMY SPACE RESEARCH (passive) ~~Radiolocation~~ MOD S5.340

Reasons: It is essential to maintain the 226-231.5 GHz band passive. The MOD refers to the band limits only; no change (NOC) is proposed to the allocations within this sub-band. Passive sensors require exclusive use of only the 226-231.5 GHz portion of the 217-231 GHz band for microwave limb sounding of atmospheric constituents. In addition, this band contains a 4 GHz reference window for higher frequency water vapour measurements. This band is of vital importance to the radio astronomy service for observations of the 230.5 GHz CO line. Footnote S5.340 is modified to take into account that 217-226 GHz band is no longer passive, while adding the 231-231.5 GHz band. The fixed and mobile services, as well as the fixed-satellite downlinks, have been deleted from the 231-231.5 GHz portion to allow passive observations in this band.

MOD USA/12/94

202-~~400~~1 000 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
231.5-235	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Radiolocation	

Reasons: The only required change in this band is the 500 MHz upward adjustment of the lower band edge (see the previous modification).

MOD USA/12/95

202-~~400~~1 000 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
235-238	EARTH EXPLORATION-SATELLITE (passive) FIXED ~~FIXED-SATELLITE (space-to-Earth)~~ MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive)	

Reasons: Passive sensors are limited to microwave limb sounding in the band 235-238 GHz and can share with terrestrial services due to the absorption characteristics of this band. The fixed-satellite downlink is not compatible with the radio astronomy requirement for this band and is reallocated elsewhere. The addition of a radio astronomy allocation and RES RAS satisfies the requirements for radio astronomy spectral line and wideband continuum observations from remote locations worldwide.

MOD USA/12/96

202-~~400~~1 000 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
238-241	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE ~~Radiolocation~~	

Reasons: Additional allocations to the radiolocation, radionavigation and radionavigation-satellite services, to compensate for allocation changes in the 150-160 GHz frequency range.

MOD USA/12/97

202-~~400~~1 000 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
241-248	RADIOLOCATION RADIO ASTRONOMY Amateur Amateur-satellite S5.138 MOD S5.149	

Reasons: The addition of a radio astronomy allocation and RES RAS satisfies the requirements for radio astronomy spectral line and wideband continuum observations from remote locations worldwide. This band is added to those listed under footnote S5.149. There is no change in sharing between existing services, except for the introduction of the radio astronomy service allocation in band.

MOD USA/12/98

202-~~400~~1 000 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
248-250	AMATEUR AMATEUR-SATELLITE Radio astronomy	

Reasons: The radio astronomy service allocation is added on a secondary basis.

MOD USA/12/99

202-~~400~~1 000 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
250-252	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) RADIO ASTRONOMY ~~S5.149 S5.555~~MOD S5.340	

Reasons: Microwave limb sounding of nitrous oxide near 251 GHz defines the passive-sensing requirement for this band. Radio astronomy is added to the other passive services. The addition of another passive service does not alter sharing scenario. Footnotes S5.149 and S5.555 are consequentially deleted and band lists in these footnotes are appropriately modified. Footnote S5.340 is added to reflect the passive nature of band.

MOD USA/12/100

202-~~400~~1 000 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
252-265	FIXED MOBILE ~~S5.553~~ MOBILE-SATELLITE (Earth-to-space) RADIONAVIGATION RADIONAVIGATION-SATELLITE RADIO ASTRONOMY MOD S5.553 MOD S5.149 ~~S5.385~~ S5.554 ~~S5.555 S5.564~~	

Reasons: The fixed service is relocated to this band due to other allocation actions in other bands. The addition of a radio astronomy allocation, along with RES RAS, satisfy requirements for radio astronomy spectral line (current secondary allocation to radio astronomy at 257.5-258 GHz deleted) and wideband continuum observations from remote locations worldwide. The directional indicator added to mobile-satellite service allocation, which is paired with allocation in the 190-200 GHz band. Atmospheric absorption in the 252-265 GHz band is relatively constant and somewhat higher than in the paired downlink band. This entire band is added to those listed under footnote S5.149, and the band is deleted from S5.385 and S5.555. Footnotes S5.385 and S5.555 have been modified to reflect changes. Footnote S5.564 is no longer needed in this band due to the worldwide nature of the radio astronomy allocation.

MOD USA/12/101

202-~~400~~1 000 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
265-275	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY MOD S5.149	

MOD USA/12/102

202-~~400~~1 000 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
275-~~400~~1 000	(Not allocated) MOD S5.565	

Reasons: The change of the upper limit for applicability of footnote MOD S5.565 is to account for various passive service needs above 275 GHz that have been identified by administrations. Many lines and windows required for radio astronomy observations and passive remote sensing of the Earth exist above 275 GHz.

MOD USA/12/103

S5.149 In making assignments to stations of other services to which the bands:

13 360-13 410 kHz,
25 550-25 670 kHz,
37.5-38.25 MHz,
73-74.6 MHz in Regions 1 and 3,
150.05-153 MHz in Region 1,
322-328.6 MHz*,
406.1-410 MHz,
608-614 MHz in Regions 1 and 3,
1 330-1 400 MHz*,
1 610.6-1 613.8 MHz*,
1 660-1 670 MHz,
1 718.8-1 722.2 MHz*,
2 655-2 690 MHz,
3 260-3 267 MHz*,
3 332-3 339 MHz*,
3 345.8-3 352.5 MHz*,
4 825-4 835 MHz*,
4 950-4 990 MHz,
4 990-5 000 MHz,
6 650-6 675.2 MHz*,
10.6-10.68 GHz,
14.47-14.5 GHz*,
22.01-22.21 GHz*,
22.21-22.5 GHz,
22.81-22.86 GHz*,
23.07-23.12 GHz*,
31.2-31.3 GHz,
31.5-31.8 GHz in Regions 1 and 3,
36.43-36.5 GHz*,
42.5-43.5 GHz,
42.77-42.87 GHz*,
43.07-43.17 GHz*,
43.37-43.47 GHz*,
48.94-49.04 GHz*,
~~72.77-72.91 GHz*,~~
76.5-81.5 GHz,
81.5-84.5 GHz,
84.5-86 GHz,
~~93.07-93.27 GHz*,~~
92-94 GHz,
94.1-95 GHz,
95-100 GHz,
~~97.88-98.08 GHz*,~~
100-102 GHz,
102-105 GHz,
105-109.5 GHz,
111.8-114.25 GHz,
140.69-140.98 GHz*,
141-148.5 GHz,
148.5-151.5 GHz,
~~144.68-144.98 GHz*,~~
~~145.45-145.75 GHz*,~~
~~146.82-147.12 GHz*,~~
~~150-151 GHz*,~~
174.42-175.02 GHz*,
177-177.4 GHz*,
178.2-178.6 GHz*,
181-181.46 GHz*,
~~186.2-186.6 GHz*,~~
209-226 GHz,
~~250-251 GHz*,~~
~~257.5-258 GHz*,~~
~~261-265 GHz,~~
~~262.24-262.76 GHz*,~~
252-275 GHz,
265-275 GHz~~,~~
~~265.64-266.16 GHz*,~~
~~267.34-267.86 GHz*,~~
~~271.74-272.26 GHz*~~

are allocated (* indicates radio astronomy use for spectral line observations), administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from spaceborne or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **S4.5** and **S4.6** and Article **S29**).

Reasons: The changes to this footnote are consequential to the changes made to the related allocations.

MOD USA/12/104

S5.340 All emissions are prohibited in the following bands:

1 400-1 427 MHz,	
2 690-2 700 MHz,	except those provided for by Nos. **S5.421** and **S5.422**,
10.68-10.7 GHz,	except those provided for by No. **S5.483**,
15.35-15.4 GHz,	except those provided for by No. **S5.511**,
23.6-24 GHz,	

31.3-31.5 GHz,	
31.5-31.8 GHz,	in Region 2,
48.94-49.04 GHz,	from airborne stations,
50.2-50.4 GHz[2],	except those provided for by No. **S5.555A**,
52.6-54.25 GHz,	
86-92 GHz,	
~~105-116 GHz,~~	
109.5-111.8 GHz,	
114.25-116 GHz,	
~~140.69-140.98 GHz,~~	~~from airborne stations and from space stations in the space-to-Earth direction,~~
148.5-151.5 GHz,	
164-167 GHz,	
182-185 GHz,	except those provided for by No. **S5.563**,
190-191.8 GHz,	
200-202 GHz,	
202-209 GHz,	
~~217-231 GHz.~~	
226-231.5 GHz,	
250-252 GHz.	

Reasons: The changes to this footnote are consequential to the changes made to the related allocations.

NOC USA/12/105

S5.341 In the bands 1 400-1 727 MHz, 101-120 GHz and 197-220 GHz, passive research is being conducted by some countries in a programme for the search for intentional emissions of extraterrestrial origin.

Reasons: This informational footnote is still accurate.

MOD USA/12/106

S5.385 *Additional allocation:* the band~~s~~ 1 718.8-1 722.2 MHz~~, 150-151 GHz, 174.42-175.02 GHz, 177-177.4 GHz, 178.2-178.6 GHz, 181-181.46 GHz, 186.2-186.6 GHz and 257.5-258 GHz are~~ is also allocated to the radio astronomy service on a secondary basis for spectral line observations.

Reasons: The changes to this footnote are consequential to the changes made to the related allocations.

MOD USA/12/107

S5.553 In the bands 43.5-47 GHz, 66-71 GHz, 95-100 GHz, ~~134-142 GHz, 190~~191.8-200 GHz and 252-265 GHz, stations in the fixed and land mobile service may be operated subject to not causing harmful interference to the space radiocommunication services to which these bands are allocated (see No. **S5.43**).

Reasons: The changes to this footnote are consequential to the changes made to the related allocations.

MOD USA/12/108

S5.554 In the bands 43.5-47 GHz, 66-71 GHz, 95-100 GHz, ~~134-142~~126-134 GHz, 190-200 GHz and 252-265 GHz, satellite links connecting land stations at specified fixed points are also authorized when used in conjunction with the mobile-satellite service or the radionavigation-satellite service.

Reasons: The changes to this footnote are consequential to the changes made to the related allocations.

MOD USA/12/109

S5.555 *Additional allocation:* the band~~s~~ 48.94-49.04 GHz~~, 97.88-98.08 GHz, 140.69-140.98 GHz, 144.68-144.98 GHz, 145.45-145.75 GHz, 146.82-147.12 GHz, 250-251 GHz and 262.24-262.76 GHz are~~ is also allocated to the radio astronomy service on a primary basis.

Reasons: The changes to this footnote are consequential to the changes made to the related allocations.

MOD USA/12/110

S5.556 In the bands 51.4-54.25 GHz, 58.2-59 GHz~~,~~ and 64-65 GHz~~, 72.77-72.91 GHz and 93.07-93.27 GHz~~, radio astronomy observations may be carried out under national arrangements.

Reasons: The changes to this footnote are consequential to the changes made to the related allocations.

MOD USA/12/111

S5.558 In the bands 55.78-58.2 GHz, 59-64 GHz, 66-71 GHz, ~~116-134~~122.5-126 GHz, ~~170-182~~167-174.8 GHz and 185-190 GHz, stations in the aeronautical mobile service may be operated subject to not causing harmful interference to the inter-satellite service (see No. **S5.43**).

Reasons: The changes to this footnote are consequential to the changes made to the related allocation.

MOD USA/12/112

S5.559 In the band~~s~~ 59-64 GHz ~~and 126-134 GHz~~, airborne radars in the radiolocation service may be operated subject to not causing harmful interference to the inter-satellite service (see No. **S5.43**).

Reasons: The changes to this footnote are consequential to the changes made to the related allocation. The radiolocation and inter-satellite services are no longer co-allocated in this spectral region.

NOC USA/12/113

S5.560 In the band 78-79 GHz radars located on space stations may be operated on a primary basis in the Earth exploration-satellite service and in the space research service.

Reasons: No change is required to this footnote.

MOD USA/12/114

S5.561 In the band ~~84-86~~74-76 GHz, stations in the fixed~~,~~ and mobile ~~and broadcasting~~ services shall not cause harmful interference to broadcasting-satellite stations operating in accordance with the decisions of the appropriate frequency assignment planning conference for the broadcasting-satellite service.

Reasons: The broadcasting-satellite allocation has been transferred to the 74-76 GHz band and the broadcasting and broadcasting-satellite services are no longer co-allocated.

NOC USA/12/115

S5.562 The use of the band 94-94.1 GHz by the Earth exploration-satellite (active) and space research (active) services is limited to spaceborne cloud radars.

Reasons: This footnote was the result of allocation decisions made at WRC-97 and no change is needed.

SUP USA/12/116

S5.564

Reasons: The radio astronomy allocation is now worldwide in the 261-265 GHz band, therefore a country footnote is no longer needed.

MOD USA/12/117

S5.565 The frequency band 275-~~400~~1 000 GHz may be used by administrations for experimentation with, and development of, various active and passive services. In this band a need has been identified for the following spectral line measurements for passive services:

– radio astronomy service:~~ 278-280 GHz and 343-348 GHz~~275-323 GHz, 327-371 GHz, 388-434 GHz, 426-442 GHz, 453-510 GHz, 623-711 GHz and 795-909 GHz;

– Earth exploration-satellite service (passive) and space research service (passive): 275-277 GHz, ~~300~~294-30~~2~~6 GHz, ~~324~~316-~~326~~324 GHz, 34~~5~~2-34~~7~~9 GHz, 363-365 GHz~~, and~~ 37~~9~~1-38~~1~~9 GHz, 416-434 GHz, 442-444 GHz, 496-506 GHz, 546-568 GHz, 624-629 GHz, 634-654 GHz, 659-661 GHz, 684-692 GHz, 730-732 GHz, 851-853 GHz and 951-956 GHz.

Future research in this largely unexplored spectral region may yield additional spectral lines and continuum bands of interest to the passive services. Administrations are urged to take all practicable steps to protect these passive services from harmful interference until the next competent world radiocommunication conference.

Reasons: These additional bands have been identified by various administrations as bands that will also be used for radio astronomy observations and spaceborne passive remote sensing.

ADD USA/12/118

S5.AAA In the band 155.5-158.5 GHz, the allocation to the Earth exploration-satellite (passive) and space research (passive) services shall terminate on 1 January 2018.

Reasons: This allocation will not be needed by passive sensors after the termination date. By the termination date, all passive sensors will have transitioned to the 148.5-151.5 GHz band.

ADD USA/12/119

S5.BBB The date of entry for the allocation to the fixed and mobile services in the band 155.5-158.5 GHz shall be 1 January 2018.

Reasons: Passive sensors require the use of this band until 1 January 2018.

ADD USA/12/120

S5.CCC Use of this allocation is limited to space-based radio astronomy only.

Reasons: This band is a likely candidate for a future space-based radio astronomy mission. No other space research use is contemplated.

ADD USA/12/121

S5.DDD The 81-81.5 GHz band is also allocated to the amateur and amateur-satellite services on a secondary basis.

Reasons: Amateur allocation

ADD USA/12/122

S5.EEE The band 75.5-76 GHz is also allocated to the amateur and amateur-satellite services on a primary basis until the year 200[6].

Reasons: Amateur allocation

ADD USA/12/123

S5.YYY Use of the bands 174.5-182 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density, at all altitudes from 0 km to 1 000 km above the Earth's surface and in the vicinity of all geostationary orbital positions occupied by passive sensors, produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, shall not exceed –144 dBW/m^2/MHz for all angles of arrival.

Reasons: This footnote is required to protect passive sensors operating in this band.

ADD USA/12/124

S5.XXX Use of the bands 116-123 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density, at all altitudes from 0 km to 1 000 km above the Earth's surface and in the vicinity of all geostationary orbital positions occupied by passive sensors, produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, shall not exceed –148 dBW/m^2/MHz for all angles of arrival.

Reasons: This footnote is required to protect passive sensors operating in this band.

ADD USA/12/125

RESOLUTION RAS

Use of the bands [ ] by the radio astronomy service

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that a large number of spectral lines of astrophysical interest above 71 GHz provide unique information about cosmic processes, such as the chemistry of the interstellar medium and the formation of stars and planets, and that this information cannot be obtained from any other source;

b) that Doppler shifted lines, which are also of great interest for astronomical studies, are found far removed from the rest frequency of some spectral lines and that highly Doppler shifted lines may offer the only means to obtain information about the very early universe and the formation of galaxies;

c) that mm-wave radio astronomy receivers are designed to cover substantial portions of the atmospheric windows above 70 GHz to take advantage of the information contained in spectral lines, as well as in continuum radiation;

d) that several administrations operate mm-wave radio astronomy observatories and that some are building or are planning to build a limited number of large new facilities to exploit the most advanced technologies; and that these facilities are intended to serve the needs of the worldwide scientific community;

e) that mm-wave observatories must be located on high mountain tops or plateaux to take advantage of the driest possible atmospheric conditions necessary to obtain high quality observations; and require substantial investments on behalf of the scientific communities concerned, and that therefore their number will remain low,

noting

that sharing between the radio astronomy service and other terrestrial services operating in bands above 71 GHz is facilitated by the natural attenuation provided by atmospheric gases, and that it can be further facilitated by adequate geographic separation,

urges

administrations to establish coordination zones around mm-wave radio astronomy sites operating in bands above 71 GHz. Coordination zone radii should be determined following the procedure outlined in Recommendation ITU-R RA.1031-1, separately for ground-based transmitters, airborne transmitters and transmitters that may be located on high altitude platforms (HAPS),

resolves

1 that in the frequency bands referred to in this Resolution, co-primary status of the radio astronomy service shall be recognized within coordination zones established by administrations. No coordination requirements should be imposed upon terrestrial services outside established coordination zones;

2 that in the bands referred to in this Resolution, co-primary services operating stations within a coordination zone should coordinate their operations with affected radio astronomy stations within five years of the date of notification of the radio astronomy site to the Radiocommunication Bureau.

Annex 1 lists the radio astronomy sites that operate, or plan to operate in the bands referred to in this Resolution as of [8 June 2000]. Observatories that operate only up to 92 GHz are identified with *** under the SITE column.

ADD USA/12/126

[ANNEX 1]*

List of radio astronomical observatories operating in bands above 71 GHz

REGION 1

Country	Site	Long. o	'	"	Lat. o	'	"	Alt. (m)	Diam. (m)	Remarks
Finland	Metsahovi	24	23	17	60	13	04	61	13.7	
France	Bordeaux	–00	31	37	44	50	10	73	2.5	
	Plateau de Bure[1]	05	54	26	44	38	01	2 552	15	
Germany	Effelsberg	06	53	00	50	31	32	369	100	
Italy	Medicina***	11	38	43	44	31	14	44	32	EVLBI
	Noto***	15	03	00	36	31	48			EVLBI
Russia	Zelenchukskaya	41	26	30	43	39	12	2 100		
Spain	Pico Veleta	–03	23	34	37	03	58	2 870	30	
	Robledo	–04	14	57	40	25	38	761		
	Yepes	–03	06	00	40	31	30	931		
Turkey	Gebse-Kocaeli	29	26	52	40	47	06	200		

REGION 2

Country	Site	Long. o	'	"	Lat. o	'	"	Alt. (m)	Diam. (m)	Remarks
Argentina	El Leoncito (SJ)	69	18	07	31	47	57	2 552	1.5	Solar telescope Sub mm
Chile	San Pedro de Atacama	67	44	00	-23	02		5 000		MMA (planned)[2]
	La Silla	70	44	04	–29	15	34	2 300	15	
	Las Campanas	70	41	10	–29	01	43	2 440	4	SEST
	Pampa La Bola	67	42	00	–22	58	00	4 800		LMSA (planned)[3]
Mexico	Sierra Negra	97	18	00	18	59	00	4 500	50	Large Millimeter Telescope (LMT-under construction)

* All of Annex 1 should be considered in [ ].

1 The Observatoire de Plateau de Bure interferometer consists of three antennas of 15 m diameter.

2 The USA MMA (MilliMeter Array) will consist of 40 antennas of 8 m diameter, on a ring configuration. The diameter of the ring will be capable of variation, ranging from 80 m to 10 km across.

3 The Japanese LMSA (Large Southern Millimeter Array) will consist of 50 antennas of 10 m diameter.

Country	Site	Long.			Lat.			Alt. (m)	Diam. (m)	Remarks
		o	'	"	o	'	"			
USA	Green Bank, WVA***	79	50	24	38	25	59	946	100	NRAO-GBT
	Socorro, NM***	107	37	06	34	04	44	2 155	25	NRAO-VLA[4]
	St. Croix, VI***	64	35	01	17	45	24	46	25	NRAO
	Hancock, NH***	71	59	12	42	56	01	340	25	NRAO VLBA[5]
	North Liberty, IO***	91	34	27	41	46	17	272	25	NRAO VLBA
	Ft. Davis, TX***	103	56	41	30	38	06	1 646	25	NRAO VLBA
	Los Alamos, NM***	106	14	44	35	46	31	1 997	25	NRAO VLBA
	Pie Town, NM***	108	07	09	34	18	04	2 402	25	NRAO VLBA
	Kitt Peak, AZ***	111	36	45	31	57	23	1 946	25	NRAO VLBA
	Owens Valley, CA***	118	16	37	37	13	54	1 237	25	NRAO VLBA
	Brewster, WA***	119	41	00	48	07	52	286	25	NRAO VLBA
	Mauna Kea, HI***	155	27	19	19	48	05	3 751	25	NRAO VLBA
	Kitt Peak, AZ	111	36	50	31	57	10	1 930	12	NRAO VLBA
	Amherst, MA	72	20	40	42	23	33	314	13.7	NRAO 12 m
	Owens Valley, CA	118	17	36	37	13	54	1 236	10.4	FCRAO (Five Colleges Obs.)
	Hat Creek, CA	121	28	24	40	49	04	1 042	6.1	Caltech[6]
	Westford, MA	71	29	19	42	37	23	122	36	BIMA[7]
	Mauna Kea, HI	155	28	20	19	49	33	4 000	10.4	Haystack Obs. J.C. Maxwell Tel. CSO

[4] The VLA consists of 27 antennas of 25 m diameter, arranged in a Y pattern up to 36 km across.

[5] The VLBA consists of ten antennas of 25 m diameter, distributed across the continental US, Hawaii and the US Virgin Islands

[6] The Caltech interferometer consists of three antennas of 10.4 m diameter.

[7] The BIMA (Berkeley-Illinois-Maryland Array) currently consists of nine antennas of 6.1 m diameter. The final configuration will consist of 11 antennas.

REGION 3

Country	Site	Long. o	'	"	Lat. o	'	"	Alt. (m)	Diam. (m)	Remarks
Australia	Parkes	148	15	44	–33	00	00	60	64	
	Mopra	149	05	58	–31	16	04			
	Narrabri, NSW	149	32	56	–30	59	52			Austr. Tel. Compact Array
China	Delingha	97	43	75	37	22	43	3 200	13.7	
Japan	Nobeyama[8]	138	28	32	35	56	29	1 350	45	
	Kashima	140	39	46	35	57	15	50	34	Comm. Res. Lab.
	Mizusawa	141	08	09	39	08	00	87	10	
	Nagoya	136	58	24	35	08	55	70	4	
	Mt. Fuji	138	45	06	35	21	30	3 776	1.2	Only >300 GHz
	Kagoshima	130	26	32	31	44	52	520	20	VERA (planned)
Korea	Taejon	127	22	18	36	23	54	120	13.7	

Other

Country	Site	Long. o	'	"	Lat. o	'	"	Alt. (m)	Diam. (m)	Remarks
	Antarctica				–90	00	00			

Reasons: RES RAS sets out the details of the limitation on the radio astronomy service. Annex 1 lists the observatories that operate in the radio astronomy service in bands shared with terrestrial services above 71 GHz at the time of WRC-2000.

[8] The Nobeyama site includes a 45 m diameter telescope, an interferometer that consists of six antennas of 10 m diameter, and a 60 cm diameter submillimeter telescope.

ADD USA/12/127

DRAFT RESOLUTION XXX (WRC-2000)

Consideration by a future world radiocommunication conference of issues dealing with sharing between passive and active services 71 GHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the changes made to the Table of Frequency Allocations by WRC-2000 in bands above 71 GHz were based on the requirements known at the time of the Conference;

b) that the passive service spectrum requirements above 71 GHz are based on physical phenomenon and therefore are well known. These requirements are reflected in the changes made to the Table of Frequency Allocations by WRC-2000;

c) that several bands above 71 GHz are already used by EESS (passive) and SR (passive) because they are unique bands to measure specific atmospheric parameters;

d) that currently there is only limited knowledge of requirements and implementation plans for the active services to operate in bands above 71 GHz;

e) that in the past, technological developments have led to viable communication systems operating at increasingly higher frequencies and this can be expected to continue so as to make communication technology available in the future for the frequency bands above 71 GHz;

f) that in the future, there should be accommodation of alternative spectrum needs of the active and passive services when the new technologies become available;

g) that, following the revisions to the Table of Frequency Allocations by WRC-2000, sharing studies may be required for services in some bands above 71 GHz;

h) that interference criteria for passive sensors have been developed and are given in ITU-R SA.1029-1;

i) that sharing criteria for active and passive services in bands above 71 GHz have not yet fully developed within the ITU-R;

j) that, in order to ensure the protection of passive services above 71 GHz, WRC-2000 avoided co-allocations of active and passive services to prevent potential sharing problems,

recognizing

that to the extent practicable, the burden of sharing among active and passive services should be equitably distributed amongst the allocated services,

invites ITU-R

1 to continue its studies to determine if sharing is possible between active and passive services in the bands above 71 GHz;

2 to take into account the principles of burden sharing to the extent practicable in their studies;

3 complete the necessary studies, as soon as the technical characteristics of the active services in these bands are known;

4 develop recommendations specifying sharing criteria for those bands where sharing is feasible,

resolves

that a future competent conference should consider the results of ITU-R studies with a view to revising as appropriate the Radio Regulations in order to accommodate the emerging requirements of the active services taking into account the requirements of the passive services, in bands above 71 GHz,

instructs the Secretary-General

to bring this Resolution to the attention of the international and regional organizations concerned.

ADD USA/12/128

RESOLUTION YYY (WRC-2000)

Consideration by a future competent world radiocommunication conference of issues dealing with sharing between active services above 71 GHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that WRC-2000 made changes to the Table of Frequency Allocations above 71 GHz, following consideration of science service issues;

b) that there are several co-primary active services in some bands above 71 GHz in the Table of Frequency Allocations as revised by WRC-2000;

c) that there is limited knowledge of characteristics of active services that may be developed to operate in bands above 71 GHz;

d) that sharing criteria for sharing between active services in bands above 71 GHz have not yet been fully developed within ITU-R;

e) that sharing between multiple co-primary active services may hinder the development of each active service in bands above 71 GHz;

f) that the technology for some active services may be commercially available earlier than for some other active services;

g) that adequate spectrum should be available for the active services for which the technology is available at a later time,

noting

that sharing criteria need to be developed, to be used by a future conference, for determining to what extent sharing between multiple co-primary active services is possible in each of the bands,

resolves

1 that appropriate measures should be taken to fulfill the spectrum requirements for active services for which the technology is commercially available at a later time;

2 that sharing criteria be developed for co-primary active services in bands above 71 GHz;

3 that the sharing criteria developed should form a basis for a review of active service allocations above 71 GHz at a future conference, if necessary,

requests ITU-R

to complete the nec**e**ssary studies with a view to presenting, at the appropriate time, the technical information likely to be required as a basis for the work of a future competent conference,

instructs the Secretary-General

to bring this Resolution to the attention of the international and regional organizations concerned.

Reasons: There is no consensus whether sharing between the passive services and the active services is feasible in many of the bands above 71 GHz. This is because there is a lack of information available on these active services in this frequency range. New Resolution XXX has been added which calls for ITU-R studies on sharing between active and passive services in bands above 71 GHz. Similarly, sharing conditions between many of the relocated active services above 71 GHz are not known and need to be developed and Resolution YYY calls for studies that can develop sharing criteria and should form a basis for a review of active service allocations above 71 GHz at a future conference, if necessary.

Proposals for agenda item 1.17

"to consider possible worldwide allocation for the Earth exploration-satellite (passive) and space research (passive) service in the band 18.6-18.8 GHz, taking into account the results of the ITU-R studies"

A proposal for worldwide allocation to the Earth exploration-satellite (passive) service in the band 18.6-18.8 GHz on a primary basis

Background information

At present, the allocations for the Earth exploration-satellite (passive) and the space research (passive) services in the band 18.6-18.8 GHz are on a primary basis in Region 2, but on a secondary basis in Regions 1 and 3.

The allocation to the Earth exploration-satellite (passive) service must be upgraded to primary status if the long-term ability to obtain environmental data with passive spaceborne sensors is to be preserved. Compatibility between the passive sensors and the fixed and fixed-satellite services requires adoption of constraints on the parameters of the fixed and fixed-satellite systems that use the band.

A pfd limit of –95 dBW/m^2 in a reference bandwidth of 200 MHz on geostationary systems in the fixed-satellite service will enable passive sensors to perform their mission if measurements are restricted to portions of the sensor orbit where the sensor is moving away from the Equator while taking sensor data over land masses. Additionally, allowing for an exceedance of this value by 3 dB for up to 5% of the time will allow the fixed-satellite service to implement power control in overcoming rain fades when needed.

Similarly, limiting the power delivered to any antenna of a station in the fixed service measured across the band 18.6-18.8 GHz to not exceed 0 dBW in 200 MHz along with an antenna pattern complying with Recommendation ITU-R F.699-4 will enable sharing with the fixed service.

MOD USA/12/129

18.6-22.21 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
18.6-18.8	**18.6-18.8**	**18.6-18.8**
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)
FIXED	FIXED	FIXED
FIXED-SATELLITE (space-to-Earth) MOD S5.523	FIXED-SATELLITE (space-to-Earth) MOD S5.523	FIXED-SATELLITE (space-to-Earth) MOD S5.523
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile	MOBILE except aeronautical mobile
~~Earth exploration-satellite (passive)~~	SPACE RESEARCH (passive)	~~Earth exploration-satellite (passive)~~
Space research (passive)		Space research (passive)
MOD S5.522	MOD S5.522	MOD S5.522

Reasons: To establish a common worldwide primary allocation to the Earth exploration-satellite (passive) services to be used for environmental measurements.

MOD USA/12/130

S5.522 ~~In making assignments to stations in the fixed and mobile services, administrations are invited to take account of passive sensors in the Earth exploration satellite and space research services operating in the band 18.6-18.8 GHz. In this band, administrations should endeavour to limit as far as possible both the power delivered by the transmitter to the antenna and the e.i.r.p. in order to reduce the risk of interference to passive sensors to the minimum.~~In the band 18.6-18.8 GHz, fixed and mobile service stations shall be limited to a total power delivered to each antenna of 0 dBW.

Reasons: To enable passive sensors and the fixed service to operate in the band without excessive interference to the sensors.

MOD USA/12/131

S5.523 ~~In assigning frequencies to stations in the fixed-satellite service in the direction space-to-Earth, administrations are requested to limit as far as practicable the power flux-density at the Earth's surface in the band 18.6-18.8 GHz, in order to reduce the risk of interference to passive sensors in the earth exploration-satellite and space research services.~~ The fixed-satellite service shall be limited to a power flux-density at the Earth's surface of –95 (dBW/m^2) across the 18.6-18.8 GHz band for all angles of arrival. This power flux-density limit may be exceeded by 3 dB for up to 5% of the time everywhere in the FSS service area. The use of this band by non-geostationary-satellite orbit fixed satellite service systems with apogees lower than 20 000 km shall be in accordance with the provisions of Resolution ZZZ (WRC-2000).

Reasons: To enable passive sensors and the fixed-satellite service to operate in the band without excessive interference to the sensors. Further, studies have not been completed to determine an allowable power flux-density limit on non-geostationary fixed-satellite service systems needed to protect Earth exploration-satellite service (passive).

ADD USA/12/132

DRAFT RESOLUTION ZZZ (WRC-2000)

Power flux-density limits applicable to non-GSO systems for protection of Earth exploration-satellite service (passive) in the band 18.6-18.8 GHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that WRC-2000 made changes to the Table of Frequency Allocations in the band 18.6-18.8 GHz;

b) that the power flux-density (pfd) limit in footnote **MOD S5.523** of the Radio Regulations was derived solely upon consideration of geostationary-satellite orbit fixed-satellite service systems and non-geostationary-satellite orbit fixed-satellite service systems with apogees higher than 20 000 km;

c) that initial sharing studies have indicated that low-Earth orbiting fixed-satellite service systems cause significantly greater interference into Earth exploration-satellite (passive) service sensors than do geostationary-satellite orbit fixed-satellite service systems;

d) that further sharing studies are required of the power flux-density limit applicable to non-geostationary-satellite orbit fixed satellite service systems operating with apogees below 20 000 km for the protection of Earth exploration-satellite (passive) service systems,

resolves

that non-geostationary-satellite orbit fixed-satellite service systems operating with apogees below 20 000 km shall do so only on a non-interference basis until an appropriate power flux-density limit is determined for protection of EESS (passive) systems,

invites ITU-R

to study, as a matter of urgency, the appropriate power flux-density values to be applied to non-geostationary-satellite systems in the 18.6-18.8 GHz band to ensure protection of the Earth exploration-satellite (passive) service without unduly constraining the development of either type of system, and submit the results to a future competent conference,

instructs the Secretary-General

to bring this Resolution to the attention of the international and regional organizations concerned.

Proposals for agenda item 1.19*bis*

"in accordance with Article **S14**, to consider objections expressed by administrations with respect to the Radio Regulations Board's Rules of Procedure relating to the application of RR **2674/S23.13** in order for the Bureau to modify its findings in accordance with the conclusions of the Conference"

Background Information

No**. S23.13 (RR2674)** states that, "in devising the characteristics of a space station in the broadcasting-satellite service, all technical means available shall be used to reduce, to the maximum, the radiation over the territory of other countries unless an agreement has been previously reached with such countries." No. **S23.13 (RR2674)** was adopted at WARC-71. It was intended as a statement of good engineering practice to reduce BSS interference with the terrestrial services outside of the intended service area.

At WRC-95, however, some countries sought to have the interpretation of No. **S23.13** (RR **2674**) revised to require, as a condition for registration, the approval of other countries within the service area of a BSS system proposed as a plan modification. After thorough debate, WRC-95 instructed the RRB to revise its Rules of Procedures to reflect the results of its debate. The decision reached by WRC-95 reflected a difficult compromise on the parts of all parties involved. The RRB made the revisions, but further concerns were raised at WRC-97. These concerns led WRC-97 to adopt Resolution **536** which resolves that: "in addition to observing No. **S23.13/2674**, and before providing satellite-broadcasting services to other administrations, administrations originating the services should obtain the agreement of those other administrations."

Still dissatisfied after a review of the RRB Rules for RR **S23.13** under the "review of finding" procedures of Article **S14**, the concerned countries persuaded the 1998 meeting of the ITU Council to adopt new agenda item 1.19*bis*.

NOC USA/12/133

Therefore, the United States is of the view that there is no need to repeat the work and discussion of WRC-95 and WRC-97, and that Resolution **536** and RR **S23.13** are sufficient. The United States proposes that WRC-2000 not revise the present Rule of Procedure for RR **S23.13/2674** to apply it retroactively, i.e. to BSS filings (under Article 4 of Appendix **S30** or under Resolution **33/S9**) made prior to 18 November 1995. The United States also supports the existing separation of Article 4 of Appendix **S30** and the Rule of Procedure for RR **S23.13/2674**.

Reasons: Agenda item 1.19*bis* has the effect of re-opening an issue that was resolved after much discussion first at WRC-95, and then at WRC-97 by the adoption of Resolution 536.

Proposals for agenda item 1.20

"to consider the issues related to the application of Nos. **S9.8, S9.9** and **S9.17** and the corresponding parts of Appendix **S5** with respect to Appendices **S30** and **S30A**, with a view to possible deletion of Articles **6** and **7** of Appendices **S30** and **S30A**, also taking into consideration Recommendation **35 (WRC-95)**"

A proposal for the modification of Appendix S30, Annex 1

Background information

Annex 1 to Appendix **S30** of the Radio Regulations specifies limits for determining whether a service is affected by a proposed modification to the BSS Plan (i.e. when it is necessary to seek the agreement of any other administration). Section 5 of Annex 1 specifies limits to the change in the pfd to protect the terrestrial services of administrations in Regions 1 and 3 from modifications to the Region 2 Plan. In particular, Section 5c) specifies the pfd limits for administrations in Region 1 east of longitude 30° E. Further, through Section 8a), the pfd limits in Section 5b) of Annex 1 apply to protect terrestrial services in Regions 1 and 3 from modifications to the Regions 1 and 3 BSS Plan.

This pfd limit is very stringent at low angles of elevation. For example, in order to meet this pfd limit the BSS spacecraft power must be significantly lower in areas of western Region 2 near Region 1 (e.g. Alaska) as compared to other areas in Region 2. As a result, the provision of BSS service to these areas requires larger BSS receive dishes, in some cases as large as 2.4 m. This will be the case for Region 2 administrations that propose to modify their Plan assignments to provide service to these areas.

The FCC requires provision of BSS service to Alaska when technically feasible. A relaxation in the pfd limit in Section 5c) of Annex 1 of Appendix **S30**, as proposed below, would allow the use of 60 cm BSS receive dishes in these areas for BSS service. ITU-R studied possible modifications to the limits in Sections 5b) and 5c) of Annex 1. Section 5.2.3.5 of the CPM Report contains a proposed change to these limits. Consistent with the CPM Report, the following changes to Section 5 of Annex 1 of Appendix **S30** are proposed:

APPENDIX S30

ANNEX 1

5 Limits to the change in the power flux-density to protect the terrestrial services of administrations in Regions 1 and 3[16]

MOD USA/12/134

b) in the frequency band 12.2-12.~~5~~7 GHz for territories of administrations in Regions 1[17] and 3 ~~and those in the western part of Region 1, west of longitude 30° E~~[18]:

$-$~~132~~148 dB(W/m^2/~~5 M~~4 kHz)	for $0° \leq \gamma < $ ~~10~~5°;
$-$~~132~~148 + ~~4.2~~0.5 ($\gamma -$ ~~10~~5) dB(W/m^2/~~5 M~~4 kHz)	for ~~10~~5° $\leq \gamma <$ ~~15~~25°;
$-$~~111~~138 dB(W/m^2/~~5 M~~4 kHz)	for ~~15~~25° $\leq \gamma <$ 90°;

Reasons: A relaxation in the pfd limit in Section 5c) of Annex 1 of Appendix S30, as proposed below, would allow the use of 60 cm BSS receive dishes in these areas for BSS service. This proposal is consistent with the CPM Report.

SUP USA/12/135

c)

Reasons: Due to the changes made to item "*b)*", this note is no longer required.

NOC USA/12/136

d) in the frequency band 12.5-12.7 GHz for all the territories of administrations of Regions 1[17] and 3:

-148 dB(W/m^2/4 kHz)	for $\gamma = 0°$;
$-148 + 4.6975\ \gamma^2$ dB(W/m^2/4 kHz)	for $0° < \gamma \leq 0.8°$;
$-142.5 + 25 \log \gamma$ dB(W/m^2/4 kHz)	for $\gamma > 0.8°$;

where γ is the angle of arrival of the incident wave above the horizontal plane, in degrees.

Reasons: Consequential number change.

Proposals for agenda item 2

"to examine the revised ITU-R Recommendations incorporated by reference in the Radio Regulations in accordance with Resolution **28 (WRC-95)**; and decide whether or not to update the corresponding references in the Radio Regulations, in accordance with principles contained in the Annex to Resolution **27 (Rev.WRC-97)**"

Proposals to modify Resolution 27 (Rev.WRC-97) and Resolution 28 (WRC-95)

Background information

Certain provisions of the Radio Regulations make specific reference to ITU-R recommendations. As the ITU-R recommendations are updated, it is necessary to determine if such references should be continued, suppressed, or updated citing the revised version of the applicable ITU-R recommendation.

Although the principle of Incorporation by Reference is widely supported by ITU members, its implementation in practice leads to various difficulties. It is important that administrations are aware of which recommendations could be candidates for incorporation by reference into the Radio Regulations. Also, administrations need to know of any ITU-R recommendation currently incorporated by reference, which are being (or have been) revised during the current study period. Administrations would benefit greatly by being advised of such recommendations well in advance of a WRC. Therefore, a mechanism for the early identification should be established.

In order to allow administrations as much time as possible to consult their experts and to consider the implications of updating references in the Radio Regulations, to reflect changes to Recommendations which are currently incorporated by reference, the approach outlined in 1) below is proposed. Similarly, to facilitate the work of administrations in their preparation for the possible introduction of new instances where recommendations may be incorporated by reference into the Radio Regulations, the approach outlined in 2) below is proposed.

1) Rather than have only the Radiocommunication Assembly (RA) communicate to the WRC a list of the ITU-R recommendations currently incorporated by reference in the Radio Regulations which have been revised and approved during the elapsed study period, the Director of the Radiocommunication Bureau should provide a report to the Conference Preparatory Meeting. This report would also include a listing of those ITU-R recommendations currently incorporated by reference which are being revised in preparation for the RA. This report would be for information only and would not confer any special status on the recommendations listed.

2) If a recommendation is not currently incorporated by reference into the Radio Regulations, it could only be considered for incorporation by reference if it is in response to a WRC agenda item.

MOD USA/12/137

RESOLUTION 27 (Rev.WRC-~~97~~2000)

References to ITU-R and ITU-T Recommendations in the Radio Regulations

The World Radiocommunication Conference (~~Geneva, 1997~~Istanbul, 2000),

considering

a) that the principles of incorporation by reference were adopted by the WRC-95 and have been revised by this Conference (see Annex 1 to this Resolution);

b) that there are provisions of the Radio Regulations which employ mandatory incorporation by reference but fail to make explicit reference to the ITU-R or ITU-T Recommendations incorporated;

MOD USA/12/138

c) that the 199~~7~~9 Conference Preparatory Meeting (CPM-~~97~~99) for this Conference urged administrations to give further consideration to the status of material incorporated by reference:

– using the initial assessment provided by the Radiocommunication Bureau in the CPM Report and the set of principles given in Annex 1 to this Resolution;

– noting that mandatory references shall be explicit and use the appropriate regulatory language;

– taking into account the factors set out in Annex 2 to this Resolution;

d) that the Director of the Radiocommunication Bureau has drawn up a list (see Annex 1 to the CPM Report to this Conference) of the provisions of the Radio Regulations using incorporation by reference, which provides an initial assessment of the status of each reference and forms the basis for the work on appropriate referencing, examples of which are contained in Annex 3 to this Resolution;

e) that the Bureau has drawn up a list, contained in Annex 4 to this Resolution, of the ITU-R Recommendations to which explicit reference is made in the Radio Regulations,

MOD USA/12/139

resolves

that ITU-R and ITU-T Recommendations incorporated or proposed for incorporation by reference in the provisions of the Radio Regulations be identified and examined at WRC-~~99~~[03], with a view to establishing the correct method of reference in accordance with the principles set out in Annex 1 to this Resolution and taking into account the factors listed in Annex 2 to this Resolution, in order to complete the simplification of the Radio Regulations in respect of incorporation by reference,

ADD USA/12/140

further resolves

that, in the case of ITU-R Recommendations which are not currently referenced in the Radio Regulations, only those Recommendations which are in response to a WRC agenda item can be considered for incorporation by reference,

MOD USA/12/141

instructs the Director of the Radiocommunication Bureau

to arrange for a review of the provisions of the Radio Regulations containing references to ITU-R or ITU-T Recommendations and propose suitable recommendations to the CPM-~~99~~[02] for inclusion in its Report to WRC-~~99~~[03], using the list of provisions contained in Annex 3 to this Resolution together with the guidance contained in Annexes 1 and 2 to this Resolution, and taking into account the list of ITU-R Recommendations contained in Annex 4 to this Resolution,

urges administrations

to use the CPM Report to WRC-~~99~~[03] in order to prepare their proposals on incorporation by reference to that Conference.

ANNEX 1 TO RESOLUTION 27 (Rev.WRC-~~97~~2000)

Principles of incorporation by reference

1 Where references are non-mandatory, it is not necessary to establish specific conditions in applying the texts quoted. In such cases, reference could, for example, be made to "the latest version" of a Recommendation.

2 Mandatory references to Resolutions or Recommendations of a world radiocommunication conference (WRC) are acceptable without restriction, since such texts will have been agreed by a WRC.

3 Where mandatory references are suggested, and the relevant texts are brief, the referenced material should be incorporated in the body of the Radio Regulations.

4 If, on a case-by-case basis, it is decided to incorporate material by reference on a mandatory basis, then the following provisions shall apply:

4.1 the referenced text shall have the same treaty status as the Radio Regulations themselves;

4.2 the reference must be explicit, specifying the specific part of the text (if appropriate) and the version or issue number;

4.3 the referenced text must be adopted by the Plenary of a competent WRC, but should not be part of the Final Acts;

4.4 all texts incorporated by reference must be readily available, by being published in a separate volume;

4.5 if, between WRCs, a referenced text (e.g. an ITU-R Recommendation) is updated, the reference in the Radio Regulations shall continue to apply to the original version until such time as a competent WRC agrees to incorporate the new version of the reference. The mechanism for considering such a step is given in Resolution **28 (WRC-~~95~~2000)**.

ANNEX 2 TO RESOLUTION 27 (Rev.WRC-~~97~~2000)

Factors to be considered for the further application of incorporation by reference

In reviewing the provisions of the Radio Regulations employing references to other texts, administrations and study groups should address the following factors:

1 whether each reference is of mandatory~~, i.e. incorporated by reference,~~ or non-mandatory character;

2 whether in existing non-mandatory references, or mandatory references which are determined to be of non-mandatory character, appropriate linking language is used, e.g. the words "should" or "may";

3 whether in existing mandatory references, or other types of reference which are determined to be of mandatory character, clear mandatory linking language is used, e.g. the word "shall";

4 whether the incorporated ITU-R or ITU-T Recommendation(s) are explicitly identified;

5 where referenced ITU-R or ITU-T Recommendations are not explicitly identified, determine which ones should be identified;

6 whether text incorporated from ITU-R or ITU-T Recommendations should be placed directly in the Radio Regulations instead of using incorporation by reference;

7 if the ITU-R or ITU-T Recommendation to be incorporated is, as a whole, unsuitable as treaty status text, whether to limit the reference to those portions of the ITU-R or ITU-T Recommendation which are of a suitable nature or to place the mandatory portion directly in the Radio Regulations.

Reasons: To clarify that, in the case of ITU-R Recommendations which are not currently referenced in the Radio Regulations, only those Recommendations which are in response to a WRC agenda item can be considered for incorporation by reference. Also, minor consequential editorial changes have also been identified.

MOD USA/12/142

RESOLUTION 28 (Rev.WRC-~~95~~2000)

Revision of references to ITU-R Recommendations incorporated by reference in the Radio Regulations

The World Radiocommunication Conference (~~Geneva, 1995~~Istanbul, 2000),

considering

a) that the Voluntary Group of Experts on simplification of the Radio Regulations (VGE) proposed the transfer of certain texts of the Radio Regulations to other documents, especially to ITU-R Recommendations, using the incorporation by reference procedure;

b) that, in some cases, the provisions of the Radio Regulations imply an obligation on Member States ‡ to conform to the criteria or specifications incorporated by reference;

c) that references to incorporated texts shall be explicit and shall refer to a precisely identified provision;

d) that, taking into account the rapid evolution of technology, ITU-R may revise the Recommendations incorporated by reference at short intervals;

e) that revised and approved Recommendations will not have the same legal force as the initial Recommendations, incorporated by reference until a competent world radiocommunication conference has so decided;

f) that it would be desirable to ensure, in the cases provided for in the Radio Regulations, that the provisions reflect the most recent technical developments,

ADD USA/12/143

noting

that Member States would benefit greatly from being advised, as early as possible, of which Recommendations have been revised and approved during the study period,

NOC USA/12/143*bis*

resolves

1 that each Radiocommunication Assembly shall communicate to the following world radiocommunication conference a list of the ITU-R Recommendations incorporated by reference in the Radio Regulations which have been revised and approved during the elapsed study period;

2 that, on this basis, the WRC shall examine those revised Recommendations, and decide whether or not to update the corresponding references in the Radio Regulations;

3 that, if the WRC decides not to update the corresponding references, ITU-R shall continue publishing the ITU-R Recommendations currently referenced in the Radio Regulations;

4 that WRCs shall place the examination of Recommendations in conformity with *resolves* 1 and *resolves* 2 of this Resolution on the agenda of future WRCs,

ADD USA/12/144

further resolves

5 to instruct the Director of the Radiocommunication Bureau to report to the CPM immediately preceding the WRC those ITU-R Recommendations already incorporated by reference in the Radio Regulations which have been revised and approved since the previous WRC, or which may be revised in time for the Radiocommunication Assembly;

6 that, in the case of ITU-R Recommendations which are not currently referenced in the Radio Regulations, only those Recommendations which are in response to a WRC agenda item can be considered for incorporation by reference,

NOC USA/12/144*bis*

urges administrations

to participate actively in the work of the Radiocommunication Study Groups and the Radiocommunication Assembly in the revision of those Recommendations to which mandatory references are made in the Radio Regulations.

Reasons: To establish a procedure to advise administrations, well in advance of a WRC, of those ITU-R Recommendations already incorporated by reference in the Radio Regulations which have been revised and approved since the previous WRC, or which may be revised in time for the Radiocommunication Assembly. Also to clarify that, in the case of ITU-R Recommendations which are not currently referenced in the Radio Regulations, only those Recommendations which are in response to a WRC agenda item can be considered for incorporation by reference. Minor consequential editorial changes have also been identified.

Proposals for agenda item 4

A proposal for the suppression of Resolution 63

Background information

A proposal for the suppression of Resolution 63; this Resolution is being suppressed because the work of TG 1/2 related to this Resolution has been completed.

SUP USA/12/145

RESOLUTION 63

Relating to the protection of radiocommunication services against interference caused by radiation from industrial, scientific and medical (ISM) equipment[1]

Reasons: TG 1/2 completed its work related to Resolution 63.

Plenipotentiary resolutions

in accordance with Resolution **95 (WRC-97)**, to review the resolutions and recommendations of previous conferences with a view to their possible revision, replacement or abrogation;

Resolution 87 (Minneapolis, 1998) - Role of the notifying administration when acting as the notifying administration on behalf of a named group of administrations

Background information

The Administration of the United States, in particular as the notifying administration for INTELSAT, has considered any possible modifications to the Radio Regulations under Resolution **87**. This Administration has not experienced any difficulties either with other administrations acting as the notifying administration for a group of named administrations or acting as the notifying administration for INTELSAT. The Administration of the United States believes that the Radio Regulations are now adequate in this area and require no changes regarding the responsibilities of the notifying administration. The notifying administration and the intergovernmental organizations should retain the flexibility of making their own arrangements for interfaces with the ITU. Members of an intergovernmental organization responsible for satellite networks can best determine how it needs to comply with the Radio Regulations.